Modernization Roadmap for the Geospatial Platform

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Contents

1. Preamble

The Need for Geospatial Capabilities

The challenges this Nation will face in the upcoming decades will be multifaceted and complicated; they will require diverse information, innovative analysis and new levels of collaboration to solve. These issues and events have one other common characteristic – they occur in places.

Consider some of the most devastating events in recent United States history: the terrorist attacks on September 11, 2001, Hurricane Katrina, the mortgage crisis, and the Deepwater Horizon oil spill in the Gulf of Mexico. Responses to such events require coordination, information sharing, analysis and deployment of operational capabilities, all of which are reliant on knowledge of place.

A timely example of complex questions raised by such events is evident in the current Gulf oil spill:

- How can we best see, understand, track, and monitor the existing, pending, and future impacts of this event?
- Where do we mobilize and apply resources to provide the greatest good, prevent the greatest harm and protect the life, health and welfare of citizens?
- How do we synthesize vast information resources of the Federal, State, regional, local and Tribal governments, the private sector, academia and citizens to provide the on-the-ground situational awareness required to make wise decisions?
- How do we determine where proactive steps can be taken to prevent or minimize future impact such as identifying Gulf Coastal communities where aid will be required?

> ### Place-based Policies
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> "Place-based policies leverage investments by focusing resources in targeted places and drawing on the compounding effect of well-coordinated action. Effective place-based policies can influence how rural and metropolitan areas develop, how well they function as places to live, work, operate a business, preserve heritage, and more. Such policies can also streamline otherwise redundant and disconnected programs "
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> - *From Office of Management and Budget (OMB) Memorandum 09-28*

In addition to responding to unforeseen events, many of the day-to-day activities of government and citizens rely on information linked to places and communities. Commuting to work, choosing where to live and raise families, protecting our natural resources, planning vacation destinations, and juggling busy schedules all require knowledge about place to answer questions and solve problems.

Using place as an information management framework allows decision makers to leverage visualization techniques, government databases, and geospatial analysis tools to rapidly recognize patterns in large amounts of data and make

more informed decisions. Displaying results through interactive maps helps communicate complex ideas clearly. This "place-based" framework is consistent with Administration Priorities for place-based budgeting[1].

The Case for the Geospatial Platform

Geospatial data, tools and resources are already an integral part of many Federal, State, regional, local and Tribal day-to-day operations. While the business needs of stakeholders vary, there exist many instances where different operations require the use of similar resources. Because geospatial information often involves a significant financial investment, many governments coordinate their efforts to produce cost-savings, improve quality of services and increase efficiency, although clearly more could be done. Under the basic premise "build it once, use it many times," benefits already realized through coordination can be enhanced and expanded when implemented on a larger scale through the Geospatial Platform (also referred to as the Platform). The Platform will provide the means to enhance and expand these capabilities by offering an operational focal point for delivering trusted geospatial data, services, and applications that can be accessed and used by multiple organizations.

The Platform will promote efficient problem solving tools across organizations, thereby reducing the cost associated with developing independent geospatial capabilities. The Platform will provide the environment and leadership needed to successfully share geospatial data, services and applications that support all levels of government. It will promote information sharing across the geospatial community and provide opportunities to view and conduct business in new and innovative ways.

Building the Geospatial Platform

Coordinating the development and delivery of the Nation's geospatial data and services is a complicated task, but the geospatial community is coming together to create an initiative that does just that. The Geospatial Platform is the culmination of these efforts. The partner agencies of the Federal Geographic Data Committee (FGDC) and its stakeholders in government, academia, and the private sector are developing the foundational plans for the Platform, which is a managed portfolio of common geospatial data, services and applications hosted on a shared infrastructure and used by all sectors of society. Components of the Platform include technical architecture, processes and organizational elements, and an implementation plan. The Platform will leverage the expertise and data holdings of geospatial organizations and enhance the Nation's development of—and access to—all things geospatial.

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[1]OMB Memo 09-28 is available at http://www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-28.pdf

2. Executive Summary

The Purpose of the Geospatial Platform

The Geospatial Platform, an initiative based in the Fiscal Year 2011 Presidential Budget, with the goal of "ultimately increasing access to geospatial data,"[2] is designed to become the operational component of the National Spatial Data Infrastructure (NSDI).

The Platform will offer a managed portfolio of common geospatial data, services and applications contributed and administered by trusted sources and hosted on a shared infrastructure. The Platform's shared resources will be easily accessible, through GeoPlatform.gov, to support the Administration's priorities, enhance mission critical operations, improve analysis and support business needs. By delivering trusted assets that are "built once and used many times", the Platform will increase information sharing across various levels of government and industry, allowing for the reuse and adaptation of geospatial resources. This repurposing and availability of resources will lead to cost-savings, wider use of geospatial capabilities and higher quality software, data, and infrastructure.

The Platform is the next generation of Federal geospatial resource management, building upon the successes of *The National Map*, Geospatial One Stop (GOS), the Geospatial Line of Business (Geo LoB) and numerous other ongoing interagency geospatial initiatives. Its operations will complement current Administration initiatives such as Data.gov and the modernization of Federal information technology (IT). The Geospatial Platform fundamentally improves access to and management of geospatial resources through a focus on five key components, or Pillars, that support its implementation.

Pillars of the Geospatial Platform

- **Common Data, Services and Applications:** the Platform will deliver trusted geospatial data, services and applications that are valuable to multiple agencies or customers to meet their business requirements. These common services will be registered and discoverable through the Platform.
- **Shared Infrastructure:** the Platform will promote and foster utilization of IT components and shared investments across multiple partner organizations for joint development, operations and maintenance of common geospatial services.
- **Segment Architecture:** the Platform components will be designed and deployed through a process-driven approach that can be readily deployed in solution architectures by partners that collaborate on geospatial data and services.
- **Governance:** the Platform will implement processes by which parties with a stake in the Platform are afforded an opportunity to shape its structure, functions and capabilities.

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[2] President's Budget, Fiscal Year 2011, "Analytical Perspectives, Special Topics, Information Technology" (p. 325)

- **Portfolio Management:** the Platform will support the prioritization, selection and allocation of resources to maximize enterprise value in geospatial data, services and applications to obtain the best possible strategic impact of each investment.

The Business Model

The Platform will utilize a business model that outlines the offerings, responsible parties, partners and key customers, and a funding strategy. This business model represents a fundamental shift from managing geospatial resources on a volunteer or "other duties as assigned" basis to creating an operational capability with sustainable support.

Furthermore, the business model places new emphasis on managing a partner network of government and private sector organizations that will provide offerings through GeoPlatform.gov based on the needs and requirements of key customers. These customers can include Federal agencies and their partners in State, local, regional and Tribal governments, non-governmental organizations (NGOs), academic institutions, industry, and citizens. In order to carry out this business model, a Managing Partner will be created to orchestrate the network, ensuring that the Platform engages with partners to deliver the data, services and applications that meet customer requirements. To assess how well the Platform meets its goals and provides return on investment (ROI), the business model outlines a performance evaluation strategy.

Roadmap Implementation

In the coming months, the Geospatial Platform will engage in a number of foundational activities as part of its phased implementation. Each phase is defined by a time box in which its deliverables will be created and actions accomplished. The path forward includes ongoing collaboration with stakeholders and leveraging select, existing geospatial efforts in the Federal, State, regional and Tribal geospatial community that are ready to be shared through GeoPlatform.gov.

3. Introduction

"In 2010 and 2011, Federal data managers for geospatial data will move to a portfolio management approach, creating a Geospatial Platform to support GeoOneStop, place-based initiatives, and other potential future programs.

This transformation will be facilitated by improving the governance framework to address the requirements of State, local and tribal agencies, Administration policy, and agency mission objectives.

Investments will be prioritized based on business needs.

The Geospatial Platform will explore opportunities for increased collaboration with Data.gov, with an emphasis on reuse of architectural standards and technology, ultimately increasing access to geospatial data."

FY 2011 President's Budget[3]

The Geospatial Platform will contribute to finding solutions to the information management challenges of the Nation by organizing and sharing vital geospatial resources needed to solve the problems of the 21st century. In today's world, problems are becoming ever more multifaceted and complex, requiring diverse information and collaboration to solve. One common feature of issues and events is that they occur in places and often impact surrounding, neighborhoods, cities, regions, or global communities. Today, geospatial tools and the maps they display, widely popularized through Google Maps, Microsoft Bing and personal global positioning systems (GPSs), can serve as the basis for understanding complex issues and relationships among multiple sources of information. Geospatial tools do much more than place locations on a map. These tools, working in concert with quality geospatial and tabular data of all kinds, provide an unparalleled ability to synthesize information, visualize patterns, and clearly communicate complex ideas. Geospatial tools greatly enhance data sharing and functional collaboration across silos of information. Information visually portrayed or communicated through maps promotes understanding and facilitates collaboration among decision makers, their partners and the public. These unique features make geospatial resources important strategic information assets for the Nation.

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[3] President's Budget, Fiscal Year 2011, "Analytical Perspectives, Special Topics, Information Technology" (p. 325) (www.whitehouse.gov/omb/budget/fy2011/assets/topics.pdf)

Governments at all levels and private sector businesses use geospatial technology to meet a wide range of needs. Federal agencies and their State, regional, local and Tribal partners spend hundreds of millions of dollars on geospatial data, services and applications. Many governments garner the most value from their investments by finding ways to reuse or repurpose geospatial resources, share data, or reduce redundancy through coordination with partners. Two examples of existing cross-government geospatial cooperation include:

> **Examples of Government Geospatial Coordination**
>
> - The National Map
> - Mortgage foreclosure tracking
> - The Multi-Resolution Land Cover Consortium
> - The Geospatial Line of Business
> - Homeland Infrastructure Foundation-Level Data Working Group
> - Imagery for the Nation
> - Digital Coast

- The Department of Homeland Security (DHS), the National Geospatial-Intelligence Agency (NGA), the U.S. Geological Survey (USGS), and the Federal Emergency Management Agency (FEMA) leverage their collective buying power to purchase commercial imagery that meets agencies' needs at a reduced cost.
- To efficiently create an accurate National Hydrography Dataset (NHD), USGS, the Environmental Protection Agency (EPA), the US Forest Service (FS), and the Bureau of Land Management (BLM) coordinate efforts to avoid duplicative data collection. These agencies also foster a State stewardship program to facilitate the inclusion of detailed data collected by State governments into the NHD. This partnership supports higher quality data and reduces costs.

Under the Geospatial Platform, existing geospatial information and resources will be strategically managed as a portfolio of national assets to maximize their potential in solving problems on large and small scales while also supporting everyday business needs in a manner that increases accountability and transparency.

As directed in the President's FY 2011 Budget language, the Geospatial Platform will advance Federal geospatial asset management and access to geospatial data and services by:

- Establishing a portfolio management approach for Federal geospatial data and assets that promotes sound management practices, enables strategic investment decisions and improves overall quality of geospatial assets.
- Creating a functional, standards-based approach based on a business model to deliver common data, services and applications that become the foundation on which mission critical components are built once then shared to support Place-Based Policy initiatives and other future programs.
- Expanding the geospatial governance framework to address the requirements of State, regional, local and Tribal agencies, Administration policies and agency mission objectives.
- Prioritizing investments based on business needs and ROI.
- Increasing collaboration with Data.gov with an emphasis on reuse of architectural standards and technology.

3.1. Purpose of this Document

The purpose of this document is to serve as a modernization roadmap for development of the Geospatial Platform as a component of the NSDI. This document:

- Defines the Geospatial Platform.
- Establishes a vision and purpose for development and use of the Platform.
- Describes the key operational and supporting elements of the Platform.
- Begins to develop a Geospatial Platform Business Model (Section 5) that describes the offerings, the Business Institution, the Customers and a Financial Approach for the Platform.

- Describes a strategic, phased implementation path that develops and realizes the vision of the Geospatial Platform. Each phase is defined by a time box in which its deliverables will be created and actions accomplished.

The intended audience for this document is, first and foremost, the Office of Management and Budget (OMB) and the political and career leadership in the Federal agencies who will be key to successful implementation of the Geospatial Platform. The other primary audience for the document is the professional geospatial community.

3.2.   Definition of the Geospatial Platform

The Geospatial Platform offers a managed portfolio of common geospatial data, services and applications contributed and administered by trusted sources and hosted on a shared infrastructure, for use by government agencies and partners to meet their mission needs and the broader needs of the Nation.

The Geospatial Platform is underpinned by:
- A segment architecture, aligned with the Federal Enterprise Architecture (FEA[4]), that emphasizes reuse of open and interoperable standards and technology, and supports increased access to geospatial data and services.
- Collaborative investment and portfolio management processes that enable Federal agencies to leverage resources and share the costs of shared geospatial services.
- A government focal point responsible and accountable for coordination and provision of data and services provided by the Geospatial Platform.
- Policies and governance structures to ensure sound management practices and effective partnerships that address the requirements of Federal, State, regional, local and Tribal organizations, Administration policy and agency missions.

The Geospatial Platform will support an operational environment where agencies and their partners discover and use shared data, services and applications in support of the business of the government and its citizens. The target Geospatial Platform will be established as a service-oriented architecture based upon common, secure, interoperable and scalable open-standards based technologies. It will provide access to a range of geospatial capabilities including software, data, services and infrastructure.

3.3.   Vision and Purpose for the Geospatial Platform

The vision of a fully implemented Geospatial Platform is that all government agencies and their partners have access to geospatial capabilities to meet mission needs, ensure transparency and accountability, and make geospatial capabilities widely available to improve the business of government.

Through economies of scale, implementation of standards and leveraging national geospatial assets, the Federal Government can better manage its resources as well as improve and validate data through repeated use. Through efficient management of shared data, services and applications, the government truly serves its citizenry with the capability to visualize, analyze and access information needed for a transparent government.

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[4] For more information about Federal Enterprise Architecture visit www.whitehouse.gov/omb/e-gov/fea/

The mission, business and use requirements of the Geospatial Platform will be as diverse as the stakeholder community it serves (i.e. Federal, State, regional, local and Tribal governments, private sector, academia and citizens). The Platform will serve as the vehicle to leverage the expertise of experienced geospatial organizations and the tools they develop to meet the needs of other agencies and partners. These tools include data, services and applications that can be built once and used many times, resulting in efficiency, savings and enhanced geospatial capacity and utilization. These web-based data, services and applications will be managed as a portfolio and delivered through trustworthy providers where the following characteristics are present:

- High quality and timely geospatial data, services and applications are easy to discover and use by all levels of government, the private sector and communities of interest.
- Enterprise business needs and agency core mission requirements can be identified, planned, budgeted and exploited in a geospatial context.
- Long term costs of geo-information delivery and access are reduced, duplicative efforts are minimized and new business markets are developed.
- Business processes are optimized and knowledge management capabilities exist for locating geospatial data and obtaining services.
- Effective commercial off-the-shelf (COTS) systems and contractual business support operations are acquired more efficiently and can replace legacy geospatial applications.
- Partners leverage non-geospatial Federal investments with the goal of integrated information sharing.
- Collaborative management of geospatial investments occurs across all levels of government.
- Adaptable, proactive and inclusive interactions are promoted among all stakeholders.

The purpose of the Geospatial Platform is to:

- Provide the technology and organizational framework necessary to support Federal agency missions and Administration priorities (e.g., Data.gov and Place-Based Policy initiatives) with timely and accurate geospatial data and spatial analytical capabilities.
- Promote sustainable governance and interagency collaboration by engaging relevant stakeholders, promoting data and information sharing and supporting effective collaboration and communication across all levels of government.
- Enhance shared infrastructure, interoperability and information sharing.
- Ensure accountability for and reuse, and transparency of geospatial and related investments.
- Attain cost-savings and economies of scale through collaborative acquisition and management of geospatial assets.
- Ensure data quality and information assurance as criteria for inclusion in the Geospatial Platform portfolio.

3.4. A Culture of Transformation: Changing the Game

Stakeholders in the geospatial community have witnessed numerous Federal initiatives designed to help coordinate and manage geospatial resources that have been implemented with mixed success over the past decade. An important question now being asked is "What is different about the Geospatial Platform?" A key strategy for the Platform will be the ongoing involvement, outreach, consultation, and shared decision making with external partners to develop a shared vision and a collaborative governance approach. Over the coming months, partners and stakeholders will be engaged through a variety of means to solicit feedback, including use of social media, such as "Government 2.0," to support the exchange and transmittal of information.

The following transformations differentiate the Platform from past efforts and will help fulfill the vision of the Geospatial Platform as a transformational initiative of the NSDI.

Toward Open Government, Transparency and Accountability

Implementation of the Geospatial Platform readily supports key Administration Open Government initiatives that emphasize government-to-citizen communication, accountability and transparency including Data.gov, Apps.gov, Recovery.gov and Place-Based Policy initiatives. Geospatial technologies provide an effective platform to increase transparency and accountability not only by visually presenting information, but also by improving the ability to engage citizens, evaluate alternatives and understand complex interactions. Geospatial tools can be integrated into an electronic-government (E-Gov) environment, providing citizens with around-the-clock access to information about governmental activities, and facilitating opportunities to provide feedback and two-way communication. The Geospatial Platform will also deliver online services to provide access to information via interactive maps that allow citizens direct access to government data that is meaningful for their communities. These interactive maps often aggregate information from disparate sources, facilitating rapid analysis of the data for citizens and government officials. Maps, visual displays and geo-enabled[5] dashboards can play valuable roles in monitoring, evaluating, tracking, reporting and supporting decision making.

Toward Addressing Administration Priorities

Under the umbrella of Federal Information Technology directives, the President's FY 2011 Budget[6] identifies a number of IT funding priorities, including the Geospatial Platform. Many goals of the Geospatial Platform are complementary to those of overall IT funding; to reduce fragmentation, to streamline operations, transform customer service, and maximize the ROI from IT. The Geospatial Platform will contribute to attaining these goals by aligning with several Administration IT priorities in the following ways:

- The Platform can be linked to **Data.gov** to provide a source for shareable, reusable, and trusted geospatial data.
- Establishing a portfolio management approach for geospatial data, services and applications as called for in the budget provides a means of effectively investing and tracking investments in geospatial assets as suggested in "**Managing the Federal IT Portfolio**."
- The new **FEA** will follow an improved model of development that will, "**...redesign IT** in key business areas from the ground up, based on central Federal platforms…[and will] provide an **interoperable, secure, and cost-effective** Federal IT **enterprise.**"
- **Cloud computing,** web-based services, and shared infrastructure made available through the Geospatial Platform will support existing efforts to **consolidate Federal Data Centers** or help reduce the need for new data centers.
- The Platform can help eliminate fragmented purchasing of IT and **leverage the Federal Government's buying power** through Enterprise License Agreements (ELAs), Service Level Agreements (SLAs), and other vehicles that promote sharing of and access to reusable data, services, and applications.
- The Geospatial Platform will be focused on **customer service** and finding solutions to large and small problems that affect the Nation. **Transparency, accountability, and interoperability** are key to effective decision making, clear communication, and timely response.
- **Broadband Access for Americans** as listed in the IT section of the President's FY 2011 Budget, was mentioned as a possible focus are within the Platform's phased implementation plan.

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[5] To geo-enable is to apply geospatial capabilities to a business process in order to establish the authoritative spatial location of business data, and enable contextual spatial analysis.

[6] http://www.whitehouse.gov/omb/budget/fy2011/assets/topics.pdf

- Information sharing networks must be **secure** and **protect privacy**. Some of the recommendations laid out in the Shared Infrastructure Pillar (Appendix B) reflect these ideas, specifically relating to the "Identity, Credential and Access Management (ICAM) Roadmap and Implementation Guidance."

Toward Matters and Places of National Importance

In August 2009, the White House instructed the heads of Federal agencies to begin developing effective Place-Based Policy initiatives for the FY 2011 Budget. The Administration has identified the use of place-based planning as a priority in its efforts to guide economic development, preserve sensitive natural resources, minimize government duplication or contradictory policies and use technology for the benefit of the Nation. A focus on metropolitan areas, ecosystems, or regions can create synergies across government programs that allow agencies to share information and coordinate in ways not previously thought possible. Place-based policies make sense because issues and events happen in places, and Federal agency services are delivered to the American people in places.

Emerging national issues, such as climate change, health care, or childhood obesity can also be understood and managed using place-based approaches. As geospatial solutions are developed to address key issues, the Geospatial Platform can be used to share and leverage technical approaches and lessons learned.

While much of our society and infrastructure is supported by available geospatial assets, other issues and places, ranging from rural and coastal communities to natural hazards and homeland security, need more attention. The Geospatial Platform will serve as the Federal focal point to tap the potential of issues, places and users.

Toward Shared Leadership

A goal of the Geospatial Platform initiative is to engage the active involvement of a broad range of geospatial organizations including Federal and non-Federal partners to participate in shaping and implementing the Platform. The Roadmap identifies a variety of roles for and non-Federal partners to participate by providing services or support functions, or receive benefits from the Platform's offerings. Leadership roles can be fulfilled by government agencies or others who are willing and able to effectively contribute to the Geospatial Platform.

Today, with mapping technologies as prevalent as they are, it is also important to expand the geospatial network to include Chief Information Officers (CIOs), Chief Financial Officers (CFOs), government leadership and elected officials. The geospatial community must reach beyond its cultural borders to educate other communities about the power of geospatial tools and resources and engage other communities of interest. Toward this goal, the Geospatial Platform is committed to implement a Communications and Outreach strategy as part of the Roadmap.

Toward a Business Perspective and Common Management Practices

The Federal Government has an opportunity, through the Geospatial Platform, to manage the operations and service delivery of geospatial resources in a fundamentally different way, committing to manage geospatial assets using business-like practices. A conceptual Business Model (Section 5) presented in the Roadmap will lead to:
- A clear definition of the scope of the Geospatial Platform Offering.
- Creation of a Business Institution to serve as the focal point for accountability and management.
- Identification of key customers who will be served by the Platform.
- A plan to finance the operations of the Geospatial Platform.

Closely aligned with the development of a Business Model will be implementation of consistent management processes across the operational elements of the Geospatial Platform. These processes will include:

- **Portfolio management** of geospatial assets delivered through the Geospatial Platform including data, services and applications. The use of portfolio management will result in informed decisions about investments, using life cycle management techniques and measuring performance.
- **Project Management** where each service offered through the Geospatial Platform can be managed as a project, utilizing industry accepted project management processes and techniques.
- **Partner and Customer Relationship Management** where partners will be treated as business partners with clearly defined and agreed upon expectations, requirements and benefits. Customers will have the opportunity to express their needs and help focus services to be delivered. Both customers and partners will be provided opportunities to evaluate and offer feedback on the scope and performance of the Geospatial Platform.

Toward Sufficient and Stable Resources

A fundamental shift in the implementation strategy for the Geospatial Platform will be to move away from managing geospatial resources on a volunteer, or "other duties as assigned basis". Defining the Geospatial Platform as a business equates to running it like a business – with dedicated staff and stable and sufficient resources. The Roadmap document begins the process of identifying the resources needed to ensure a viable and sustainable offering resulting in high-impact outcomes.

3.5.   Keys for Success of the Geospatial Platform

Primed for Success

There are several reasons why the community can be confident that the time is ripe for a successful Geospatial Platform including:
- The President's FY 2011 Budget identifies the development of a Geospatial Platform as a priority IT initiative for Federal agencies. This recognition engages the OMB to develop a plan (the Roadmap) under the auspices of the Department of the Interior.
- The underlying technology and standards exist to develop and deliver the vision of the Geospatial Platform. The Internet and computing infrastructure has matured to support the delivery of shared geospatial services to multiple organizations. There exists a robust private geospatial sector, primed to provide a range of software, hardware, data, and services. Industry IT and open and interoperable geospatial standards that can be adopted and used to allow sharing of data and applications.
- Past geospatial coordination efforts enable us to move forward. The Platform is the logical next step in the evolution from dispersed governmental, private and academic geospatial resources into a cohesive NSDI. Beginning with GOS, the Nation took some of the first steps toward making geospatial data more accessible. The National Map is developing shareable, high quality, base geographic data using a network of partners in support of the NSDI. The Geo LoB sought to further integrate disparate geospatial projects and resources throughout the government.

Spurred by new technological innovations such as cloud computing and a wider acknowledgement of the value of geospatial information, the Platform represents a profound and valuable contribution to the full realization of an NSDI. The Platform can be seen as the operational component of the NSDI, as it will provide a framework for the sharing and national management of geospatial data, as well as geospatial services and applications that can meet common needs across various levels of government, academia, NGOs and the private sector. The Platform

embraces the goals of the NSDI to improve data quality and accessibility. However, it does not represent the full implementation of the NSDI, instead focusing on operations and practical problem solving.

Success Themes for the Geospatial Community

The Geospatial Platform is a highly ambitious yet achievable initiative. Realization of the vision is largely within the capacity of the geospatial community. In order to achieve the vision of the Geospatial Platform the community must:

- Act as one to develop, articulate, and commit to a shared vision.
- Set aside past differences and work together toward common goals.
- Develop a business perspective that includes strategies and incentives for true partnerships.
- Realize a governance approach that provides for meaningful input and consultation with all sectors of the geospatial community.
- Initiate unprecedented outreach and communications using both traditional and new media to educate partners and customers.

Support Needed to Ensure Success

Some success factors for the Geospatial Platform are beyond the exclusive control of the geospatial community and require the continuing support of the Administration including:

- Designating and empowering the Managing Partner.
- Providing resources.
  - For hosting content as a primary incentive for participation by partners.
  - Long term financial support through appropriations starting in FY 2012 for infrastructure, content, and Platform management.
- Creating a supportive policy environment that encourages and ensures agency participation (e.g., finalization and enforcement of OMB Circular A-16 Supplemental Guidance (A-16 Supplemental Guidance), geospatial segment architecture, grants and contracts language).
- Providing political leadership to support the FGDC enterprise.
- Developing a strong organizational relationship between the Geospatial Platform and Data.gov.

4. Pillars of the Geospatial Platform

The Geospatial Platform is envisioned as a managed portfolio of common geospatial data, services and applications contributed and administered by authoritative sources and hosted on a shared infrastructure. In its current design, the Geospatial Platform is composed of five inter-related components (Pillars) which can be logically grouped into two discrete categories:

Offering – what the Geospatial Platform creates and delivers
- Common Data, Services and Applications.
- Shared Infrastructure.

Supporting Processes – what the Geospatial Platform requires to deliver data and services
- Segment Architecture.
- Governance.
- Portfolio Management.

4.1 Pillars Defined

The current working definitions of the five Pillars are provided below. Additional detail on each Pillar is contained in Appendices A-E.

Offering
Common Data, Services and Applications: trusted geospatial data, services and applications, that are used by two or more agencies or partners to meet business requirements and registered and discoverable through the Geospatial Platform.

Shared Infrastructure: utilizing the same IT components and investments across multiple partner organizations for joint development, operations and maintenance of geospatial activities to leverage best practices, increase economic efficiency and lead to the publishing of high-value geospatial data and services.

Supporting Processes
Segment Architecture: process-driven approach to designing and deploying large computing components in the context of a broader enterprise, which results in a design that can be readily deployed in an actionable solution architecture by partners that collaborate on geospatial data and services.

Governance: process by which parties with a stake in the Geospatial Platform are afforded an opportunity to shape its structure, functions and capabilities. The ultimate vision is to be a national system with shared governance.

Portfolio Management: set of processes by which the Geospatial Platform prioritizes, selects and allocates resources, as well as manages and evaluates their performance, to maximize enterprise value and obtain the best possible strategic impact of each investment. Portfolio management pertains to the management of investments in geospatial data, services, and applications[7].

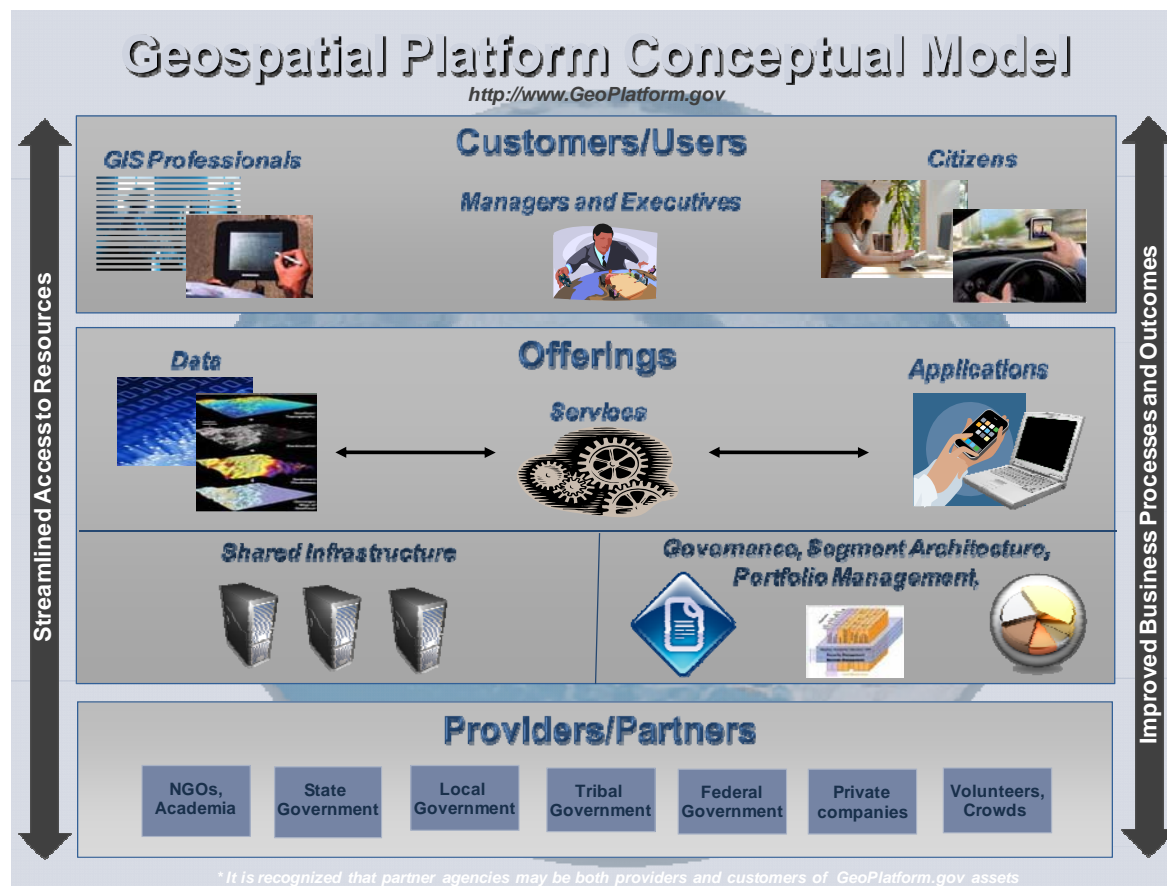A conceptual model of the Geospatial Platform is shown in Figure 1 below.

Figure 1. Geospatial Platform Conceptual Model

4.2. Challenges

The success of the Geospatial Platform will depend on strong and dedicated leadership that can overcome a number of challenges associated with the development of a Federal enterprise. The Platform leadership may find it challenging to identify needs as well as human, technical and financial resources to accomplish all of the planned tasks; this is why agency and stakeholder support is imperative in this endeavor. The Platform leadership must put forth maximum effort in recruiting participation and stakeholder support, as well as ensure participants remain actively engaged. This may be done through clear marketing and visibility of services to the user and stakeholder communities.

[7]Detailed information on data portfolio management can be found in the OMB Circular A-16 Supplemental Guidance www.fgdc.gov

Leadership should not only come from within the Platform management team, but also from agency political leadership in order to provide the full scope and level of support Platform activities. Some agencies may be reluctant to adopt new policies, procedures and funding plans. In order for the Platform to achieve tangible results, leadership must receive stakeholder buy-in by demonstrating benefits (e.g. ROI, optimization of resources, etc.) and providing incentives for participation (e.g. promotion of agency software and data). The approach may also include change management and resource and knowledge management. Finally, at all times, the Platform leadership must focus on the measurable results of ongoing activities to maintain user and stakeholder trust in the effort.

Additionally, the Geospatial Platform must remain nimble and adaptable to address stakeholder priorities over time. Flexibility to accommodate a full range of stakeholder expertise and maturity may make the Geospatial Platform more desirable at the onset and continue to keep it relevant. In addition, as technology advances, the Geospatial Platform must adapt to utilize these new tools.

In order to address non-Federal stakeholder priorities over time, the Geospatial Platform must stay current on the requirements and needs of State, regional, local and Tribal governments, as well as distinguish the differences in fiscal years and budget processes. There are many conflicting mission requirements among agencies. One challenge will be clearly identifying the business requirements of Federal agencies for geospatial data and services, so that the envisioned Geospatial Platform capabilities can be aligned to meet those requirements The Geospatial Platform will address this challenge through the use of automated tools. In coordinating with non-Federal stakeholders, it is understood that licensing and data sharing constraints may exist in some local governments, creating difficulties to leverage and share data.

Another crucial component for determining Geospatial Platform success is the long-term budgeting and investment strategy. Unless the leadership determines a viable and sustainable long-term investment strategy, the Geospatial Platform may not prove to be financially-viable in the long-term and stakeholders may not be willing to invest funds in the Geospatial Platform activities.

4.3.   Resources

Like any viable business, the Geospatial Platform will require full-time resources to carry out its functions. A Managing Partner is proposed in the Business Model (Section 5) that needs staff who can oversee Pillar activities to deliver Geospatial Platform services. Important functions of Geospatial Platform staff will include establishing and managing relationships with partner providers, managing the portfolio of geospatial assets delivered by the Geospatial Platform, facilitating requirements analyses, customer relationship management, and outreach efforts. These activities and the skills needed to carry them out will lead to cost-savings, cost avoidance, and a greater understanding of Federal geospatial investments as the Geospatial Platform becomes fully operational.

In the first stages of the Geospatial Platform development, some capital investments will be necessary to ensure adequate processing capabilities, data migration and start-up infrastructure. Over time, however, these investments will reduce the overall cost of geospatial technology by decreasing redundancy, increasing efficiency and improving agencies' core business processes.

To further reduce costs, the Geospatial Platform will leverage existing technology, infrastructure and other resources. The Geospatial Platform will utilize the resources of similar initiatives, such as cloud computing, data center consolidation led by the Federal CIO Council and Electronic Capital Planning and Investment Control System (eCPIC). Sharing the tools and technology developed by other agencies or partners not only reduces costs,

but also speeds implementation of the Platform and builds upon already established best practices. Additionally, the Platform will utilize existing geospatial data when feasible.

5. Business Model

The Geospatial Platform will facilitate a network of providers delivering Internet-based geospatial services to a broad customer base including Federal agencies and their partners in State, regional, local and Tribal governments, NGOs, academic institutions, industry, and citizens. The Platform will function in a business-like fashion according to a Business Model that ensures all factors needed to operate a successful Platform are considered and analyzed and that they are reasonable and achievable.

The Geospatial Platform Business Model includes the following components:

- The Offering and Value Proposition – what the Platform creates and delivers and the value proposition, including why potential customers will be compelled to consume Platform services, how it will help solve their problems, and how it will make their programs run more efficiently.
- Business Institution – the organization, governance model, technology, skills, personnel, partnerships and production processes that support Geospatial Platform.
- Customers – the consumers of the Geospatial Platform offerings.
- Financial Approach – the approaches for financing implementation and ongoing management of the Platform.

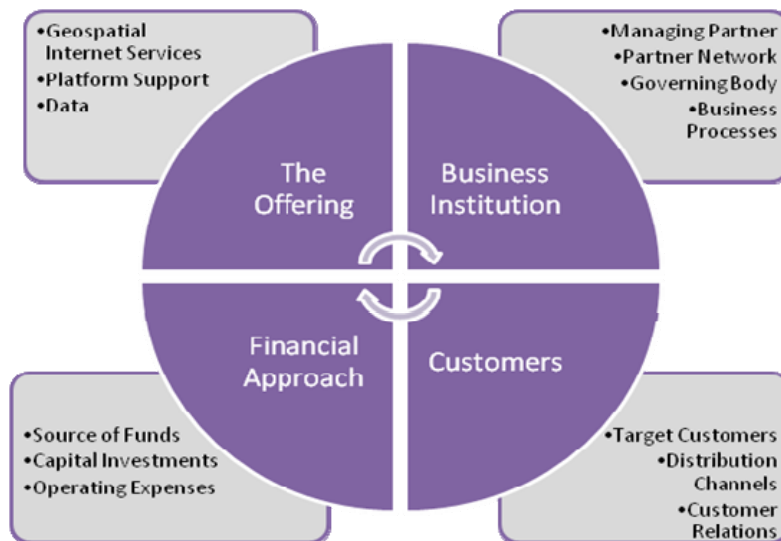The components of Geospatial Platform are portrayed graphically in Figure 2.

Figure 2. Business Model Componenets

5.1. The Offering and Value Proposition

The Geospatial Platform will support two categories of activities comprising the offering, as shown in Figure 2, which includes:

- A suite of trusted geospatial internet services to provide organizations with a one-stop focal point for geospatial data and applications through a web interface.
- A suite of Platform Support Services that will facilitate delivery of the Geospatial Platform offering.

Geospatial Internet Services

Through GeoPlatform.gov, customers will have access to Geospatial Internet Services that provide:

- Trusted national geospatial data assets (NGDAs). Trusted data will include datasets such as those covered in OMB Circular A-16 as well as integrated base maps. Nationally consistent datasets delivered through the Platform must be managed using data life cycle management practices (such as those described in A-16 Supplemental Guidance and referenced in Appendix E). These datasets and base maps can be provided by government agencies or private sector partners and will provide foundational geospatial data that can be trusted, used reliably, and shared across organizations to avoid duplication and confusion.
- Shared geospatial services and applications that support common agency business functions. Federal agencies and programs often share common business functions (i.e. permitting, monitoring, emergency preparedness and response, inspections, etc.). Geospatial services that can be built once and used many times will be identified and delivered through the Platform, and will begin by leveraging existing capabilities. In addition to delivering applications to support shared mission and business functions, the Platform will serve as the Federal focal point for promoting and implementing open and interoperable geospatial standards, as well as provide standards based interfaces to encourage broad adoption and adapting applications by other organizations.
- An environment to discover and share geospatial data, services and applications.

Platform Support Services

These are services that enable and support the Platform offering and include:

- A shared technology infrastructure that aligns with the overall FEA and the Federal Government's IT priorities.
- Training and technical support for customers of, or contributors to, the Platform.
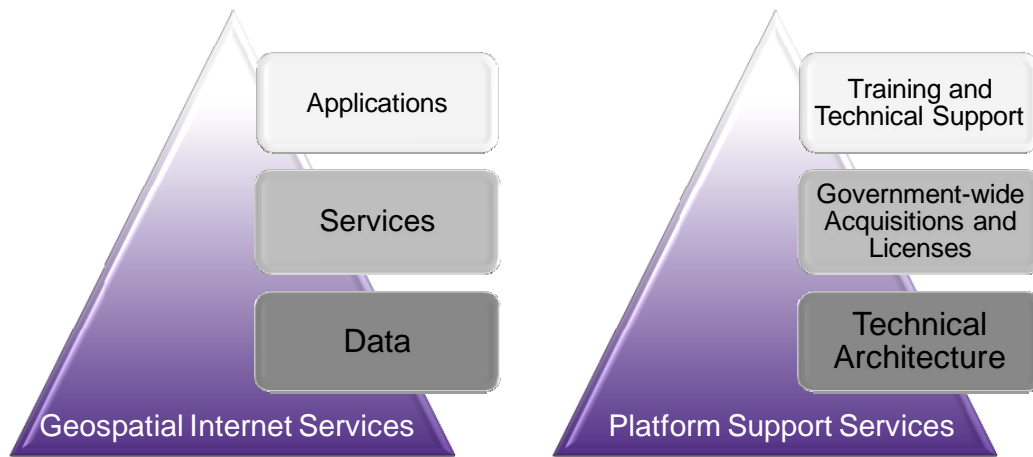- Management support for government-wide geospatial acquisitions and ELAs.

Figure 3. The Geospatial Platform Offering

5.2. The Business Institution

The Geospatial Platform Business Institution will contain related elements that include:

- **A Geospatial Platform Managing Partner** (Managing Partner) that will coordinate the Platform's activities and provide core operational capabilities and competencies needed to oversee the Platform offering. Core capabilities and competencies of the Platform include facilities, equipment, and personnel with the required skills needed to produce the services described in the Value Proposition.
- **A Geospatial Platform Partner Network** that will be comprised of providers of data, services, applications, and infrastructure and the business alliances needed to operate GeoPlatform.gov. This network of providers (partners), graphically depicted in Figure 4, are brokered and coordinated through the Managing Partner.
- **A Geospatial Platform Governance Approach** that will ensure stakeholders of the Platform, including customers and providers, are afforded an ongoing opportunity to shape its structure, functions and capabilities and that will oversee the portfolio of data, services and applications.
- **A Set of Geospatial Platform Business Processes** that produce offerings for customers and ensure government accountability and transparency through customer feedback and performance measurement.

The Business Institution for the Geospatial Platform can be viewed in Figure 4 as a network of providers (partners) and business processes that are brokered and managed through the Managing Partner.
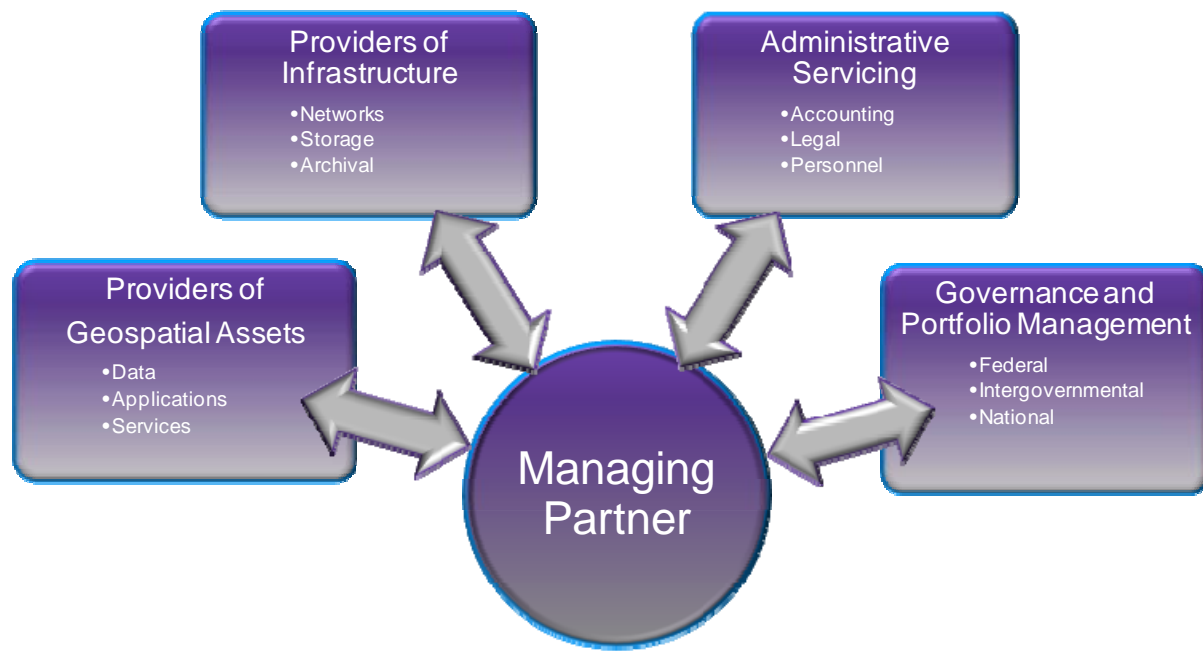
Figure 4. The Geospatial Platform Business Institution

The Managing Partner

The Managing Partner will serve as a broker and manager of the Partner Network that provides data, services, applications and infrastructure for customers and will provide the primary interface to customers.

Through the end of Time Box 2 (December 31, 2010), as described in Section 6 Roadmap Implementation, the Managing Partner role will be met in the following way:

- The Department of the Interior (DOI) will serve as the interim Managing Partner organization.
- The Chair of the FGDC (or designee) will serve as interim Executive Sponsor of the Geospatial Platform.
- An interim Project Manager will be donated by one of the Federal agencies.
- The FGDC Secretariat and Federal member agencies will provide interim staff support to the Geospatial Platform.

A process for selection and oversight of the longer-term Managing Partner will be developed in consultation with OMB, the FGDC chairs and Steering Committee. Initial criteria for a successful Managing Partner organization and individual (s) should include:

- Ability to negotiate and manage formal partner relationships (e.g. contractual agreements, service level agreements, etc.).
- Capability to conduct geospatial requirements analyses.
- Credibility with the geospatial stakeholder community.
- Portfolio management capabilities.
- Customer relationship management capabilities.

The Partner Network

Building effective partnership opportunities is a critical component of the Platform as these partnerships allow the Platform to meet the business requirements of its stakeholders. Partnerships take two basic forms in this context. The first is when organizations work together for the same purpose, much like State, regional, local and Tribal government agencies work with individual Federal agencies on mission-oriented activities (e.g. transportation, parks or the environment). The other is in a broader context where burden sharing on the development of ubiquitous data, services or applications production will benefit multiple agencies that do not already have an established relationship.

The Geospatial Platform offers an opportunity for the Federal geospatial community to take a fresh look at the concept of partnerships. New technology and social networking tools offer potential for new and creative partnerships that can lead to common solutions and equitable access, effectively leveling the geospatial playing field for all. In addition, a cultural shift is underway with the emergence of citizens as contributors to facilitate virtual government. Renewed partnership thinking can also leverage private sector investments and thought leadership in location based services that are increasingly becoming commodities in the business world. While the Geospatial Platform is focused initially on U.S. national geospatial opportunities, we should embrace and learn from efforts underway to create similar geospatial initiatives around the globe. These international efforts may also shed light on new partnership models.

Partners can be Federal entities, other governmental organizations, NGOs, academic, or private sector organizations that provide geospatial assets, infrastructure, administrative support and coordination and governance. Entities that provide services to the Geospatial Platform are viewed and treated as partners, specifically distinguished from customers. These partner organizations provide content or services to the Geospatial Platform, and as such will meet certain "rules of engagement" included in negotiated contractual, license, or service level agreements. The business processes employed by the Managing Partner and the Partner Network to support the Geospatial Platform will be clearly defined and monitored

As the Platform becomes more successful, it is likely that Federal agencies will move their individual mission-oriented applications to the Platform for reasons of efficiency and cost avoidance. However, it will often be necessary to modify policy or regulation, and to carefully design the IT infrastructure for conversion of applications to the Platform to avoid interruption of mission critical applications.

During Time Box 1 (Section 6) we will focus on developing partnerships based on the more ubiquitous requirements that affect a broad cross-section of agencies at the Federal, State, regional, local and Tribal levels. The following are examples of the partnership opportunities that will most likely result in immediate relationships:

- **Hosting:** Assigning a real value (cost) to hosting data for other agencies so that discovery, distribution, back-up and archival services are professionally managed and assured. This reduces or eliminates the burden on individual agencies to perform these services and makes it possible for others without these resources to put their data in the public domain. Coordination, standards and best practices will be an integral part of this opportunity that improves the value of local contributions to the Federal Government.

- **Common Applications:** Providing applications to meet government-wide business needs in a timely fashion can be more quickly and easily managed through an individual platform to make government more effective. An example would be developing and isolating a map interface, registry of services and data access to deal with major events such as a hurricane or the Deepwater Horizon oil spill. Other examples might include supporting the Place-Based Policy initiatives of the Administration that will benefit State, regional, local, and Tribal governments.
- **Common Services**: Hosting geocoding and base map services provides immediate value to government agencies that are without these capabilities. Continuing to improve the quality of the databases with locally produced or possibly crowd-sourced data will ensure that such services provide value to all agencies.
- **Data Production:** Establishing business requirements, technical specifications and production schedules for Federal data needs will create the opportunity for some cost sharing partnerships with State, regional, local or Tribal governments. Offering them a cost share of like amount to be applied to their larger scale projects (e.g. Parcel data) significantly increases the value to both partners.

> **Building Partnerships**
>
> Parcel information, containing the value, boundary and ownership of land, is a prime example of local data ripe for regional/national synthesis. At the municipal level, parcel information is critical for day-to-day operations; transactionally collected and maintained as part of any government's mission.
>
> The Geospatial Platform creates an opportunity for municipalities to offer their parcel data on a shared hosting service, transitioning from a 'patchwork' approach to a nationally consistent parcel management system. This information would help governments at the local, State and Federal level better accomplish their missions and objectives.

Effectively marketing each of these opportunities and their benefits will help to establish partnerships. Participation levels can be increased to acceptable thresholds by measuring results at various service levels, and then identifying and enhancing services to increase participation with the Platform.

The Geospatial Platform Governing Approach

One of the key components of the Geospatial Platform is to develop a shared governance model that involves non-Federal partners. The President's budget direction notes that the Platform will be "facilitated by improving the governance framework to address the requirements of State, regional, local and Tribal agencies, Administration policy, and agency mission objectives." The FGDC membership is committed to managing Platform operations through a collaborative, intergovernmental approach.

To facilitate this collaborative approach, the FGDC will continue to work through the National Geospatial Advisory Committee (NGAC), which includes representatives from a broad cross-section of the geospatial community, including members from governmental, private sector, non-profit, and academic organizations. In addition, the NGAC's activities will be supplemented by an intergovernmental body that can provide specific advice on the operational aspects of the Geospatial Platform. Options may include establishing an intergovernmental subcommittee of the FGDC, or establishing an intergovernmental subcommittee through the NGAC. A key to the success of the Platform is ensuring that effective mechanisms for non-Federal stakeholder voices are created and supported.

A process for long-term, intergovernmental governance of the Geospatial Platform will be developed in collaboration with partners from other levels of government, the appropriate Federal agencies, and in consultation with OMB, the FGDC Chair and Steering Committee.

The Geospatial Platform Business Processes
The following business processes are highlighted in the Roadmap as key to the success of the Platform:

- **Portfolio Management** processes (Appendix E) will be implemented by the Managing Partner to prioritize and select assets, and allocate resources of the Geospatial Platform. Portfolio management also supports management and performance evaluation of geospatial assets to which resources are applied to help ensure the appropriate combination of assets are available to best accomplish organizational goals and objectives of customers. The Geospatial Platform portfolio management process supports investment decisions for four categories of geospatial assets: data, services, applications and infrastructure.
- **Incentives** for participation will be identified for both partners and customers, and it is envisioned that different incentives will be meaningful for different organizations. Through the Geospatial Platform Managing Partner, explicit and achievable incentives will be defined to help encourage partnerships that might include: hosting capacity, technical support, exposure of partner services to the broader community, or reimbursement for services. For instance, State organizations might find that database hosting services offered by the Platform are a valuable incentive to provide services. In essence, States may be willing to manage and share key geospatial data sets if the Platform provides hosting services in return. For some private sector organizations exposure of their value added applications might serve as an incentive to offer services to the Platform.
- **Performance Measures** will be developed and tracked by the Geospatial Platform to ensure accountability and transparency through customer feedback and performance metrics (Section 5.6).

5.3.   The Customers

A key component of the Business Model is the customer. Key customer segments may include:

- Federal Government.
- State, regional, local, and Tribal governments.
- Private sector.
- Academia.
- NGOs.
- Citizens.

Customers can also be categorized as:

- Geographic Information Systems (GIS) Professionals.
- Executives.
- Managers.
- Scientists.
- The lay public.

An initial step includes conducting a needs assessment of the customer base to identify target customers, understand the means by which the Platform will deliver services to the customers, and develop the processes of

ongoing customer interactions and feedback mechanisms. During this initial period of operation, priority customers will be Federal agencies, geospatial professionals and Federal executives.

The Managing Partner will act as the primary interface between the Geospatial Platform and its customers. The anticipated major categories of customer interactions are depicted in Figure 5.
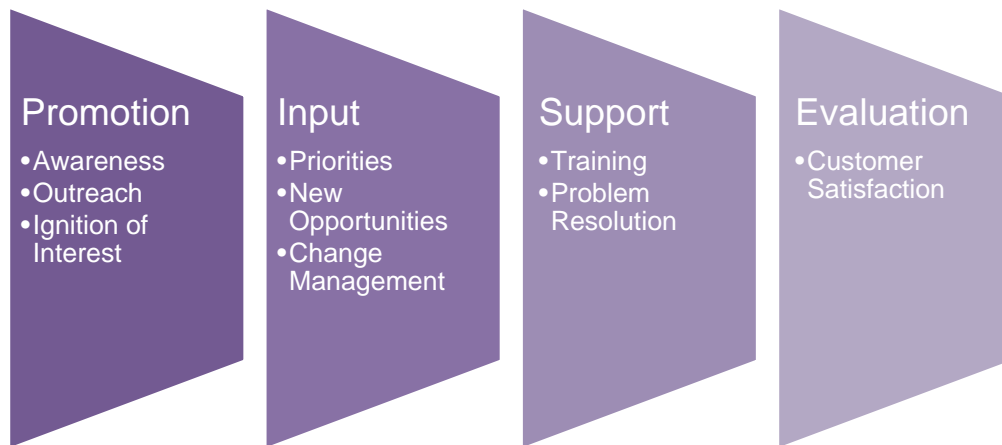.

Figure 5. Major Categories of Customer Interactions

5.4.   The Financial Approach

The financial approach for the Geospatial Platform considers both the costs to develop and manage GeoPlatform.gov and the sources of funds and other resources that will be used to cover the costs.

Geospatial Platform Costs
The Business Institution is the component of the Platform that creates expenses; these include both direct costs and overhead costs. Platform expenses, grouped by the core elements of the Business Institution, include:

Geospatial Platform Managing Partner
- Salary and benefits for Program Manager.
- Staff and/or contractual services for:
    - Customer relations and support.
    - Partner relations.
    - Geospatial technical oversight and management.
    - Administrative and financial management.
    - Marketing (e.g., promotion, pricing, product development and research).
    - Outreach and Communications.
    - Government accountability (e.g., budgeting, performance management, reporting).
- Office hardware and software to support Program Manager and staff.

Geospatial Platform Partner Network
- Provisioning of technology infrastructure for hosting.

- Acquisition of content (data, applications, and services) from partners/providers.
- Technical Support and training for partners.

Geospatial Platform Governing Organization
- Staff and/or contractual services for stakeholder input and portfolio management.
  - Meetings.
  - Communications.
  - Portfolio management process development and application.

Geospatial Platform Source of Funds and Other Resources
The Geospatial Platform is considering using four major methods to cover the costs of operations. These include:
1. No-Cost Contributions from Partners.
   - Partners providing content as a part of filling mission requirements to create public domain geospatial formation (e.g., National Wetlands Inventory, *The National Map*).
   - In-kind contributions from partners who are willing to cover the full cost of a dataset, application or service because the marginal costs beyond meeting their mission obligations is minimal (e.g., Palanterra).
   - Donations of data, applications, services or infrastructure from government agencies or their partners.

2. Incentive-based Partnerships.
   - Intergovernmental partnerships that involve a government entity providing no-cost data, applications, or services to the Platform in return for receiving commensurate customer benefits.
   - Intergovernmental partnerships that involve government entities sharing the cost of data, applications, or services in return for receiving commensurate customer benefits.

3. Income from Customers of Services.
   - Metered services (e.g., geocoding costs charged per transaction).
   - Subscription fees.
   - Across the board assessments (e.g., Geo LoB, GOS).
   - Reimbursable agreements under the general authority of the Economy Act.

4. "Common Good" Funding.
   - Direct appropriations and/or reinvestment of cost-savings.

In summary, the Geospatial Platform business model places new emphasis on managing a partner network of government and private sector organizations that will provide an offering of trusted common data, services and applications based on the needs and requirements of key customers.

6. Roadmap Implementation

This section describes the strategic path forward for development and implementation of the Geospatial Platform. In developing the Geospatial Platform, the FGDC is building upon multiple ongoing and related efforts, including Geo LoB activities, *The National Map*, development of the segment architecture, collaboration with Administration activities (e.g., Data.gov, Apps.gov, etc.) and development of related programmatic initiatives (e.g., development of a business plan and budget request for the Imagery for the Nation initiative). In addition, as the Geospatial Platform moves into implementation, the FGDC will collaborate with external stakeholders to share the modernization roadmap and seek input and refinement of a shared vision. The Platform implementation approach will be informed by several key principles:

6.1. Long-term Vision

The Geospatial Platform will be developed in accordance with a shared long-term vision. This document provides a conceptual vision, to be refined based upon collaboration and consultation with our partners and stakeholders. The vision of the Geospatial Platform is consistent with the Geospatial Segment Architecture, builds upon the portfolio management practices outlined in the A-16 Supplemental Guidance and aligns with the Administration's goals for ensuring transparency, democratizing the public-sector data and driving innovation.

6.2. Phased Implementation

While building toward a shared long-term vision, the Geospatial Platform will be developed in a phased approach, with a bias toward action that will provide immediate improvements and useful products and components for customers. This incremental development approach will provide a steady stream of offerings that are consistent with the overall Geospatial Platform architecture and are informed by interactions with partners, stakeholders and customers through an enhanced and collaborative governance approach.

6.3. Collaboration with Partners and Stakeholders

The Geospatial Platform effort will involve substantial outreach and consultation with external partners to reach a shared vision and develop a collaborative governance approach. Over the coming months, the FGDC will engage with partners and stakeholders through a variety of means, including the following:
- Consultation with the NGAC.
- Social media approaches.
- Targeted sessions with key stakeholder groups.
- Dialogue and discussion at industry and professional meetings and conferences.

6.4. Project Management

The Geospatial Platform will be managed using best practices of project management, including a "time box" approach to phased implementation. Time boxing is a project management technique often used in planning projects and in rapid application development (RAD) software development processes, where an implementation schedule is divided into a number of separate time periods (time boxes), with each period having its own deliverables and deadlines. The initial implementation of the Geospatial Platform focuses on incremental implementation of existing components and capabilities using dedicated teams organized against the time box goals.

6.5. Measuring Performance

Performance measures are an integral part of understanding how the Platform meets stakeholder needs, identifies successes and gaps, and provides insight into ROI. In addition, performance measures extend transparency and enhance accountability among both internal and external stakeholders. The Geospatial Platform leadership and its partners are committed to finding the right blend of performance measures that will provide a practical, yet holistic look at the Platform and its offerings. Performance measures link overarching goals of the Platform to the day-to-day operations and resources (human, intellectual, financial and organizational), and answer key questions about performance, outputs, and outcomes including:

- Are the right people involved and are those with responsibilities meeting those responsibilities?
- Are stakeholder needs clearly defined and efficiently addressed?
- Are investments showing returns and value? Are resources measured and maximized? Are there opportunities for partnerships or collaboration?
- Are the right assets (i.e. data, services, applications) available and of high-quality? Are the appropriate selection criteria in place? Are there opportunities for collaboration or consolidation?
- Does the infrastructure function as intended? Is access available when needed and to the right people?
- Are priorities selected efficiently? Are priorities organized and addressed appropriately?
- Are best practices and lessons learned captured?
- Have reporting mechanisms (e.g. dashboards, maturity models, etc.) and timetables been established?

Financial Performance and Investments
Financial performance metrics provide indicators highlighting the health of the Platform and can show ROI for assets within the Platform Portfolio (i.e. data, services, applications) as well as investments made in human capital and infrastructure that allow the Platform to address stakeholder needs.

- Cost avoidance in dollars from ELAs.
- ROI calculations for data investment.
- Cost-benefit analyses for services.
- Investment collaboration reviews for data, services, and applications or to set platform-wide investment priorities.
- Opportunity cost analysis of partnerships.

Operational Performance Metrics
Operational performance metrics highlight the day-to-day operations and maintenance goals of the platform and provide information on what data, services, or applications are available on the platform as well as when, and what people are seeking/using within the platform. Some examples of operational performance metrics might include:

- Quantity of data, services and applications available through the platform.
- Number of downloads/site visits.

- Percentage of users who are repeat customers.
- Number of Federal, State, regional, local or Tribal users.
- Average server or request response time.
- Percentage of time the platform is "up".

Customer Service Performance Metrics

Similar to operational performance metrics, customer service performance metrics highlight day-to-day platform usage; however, unlike operational metrics above, these metrics focus on who is using the platform and whether the platform is meeting stakeholder business needs. Examples of customer service performance metrics might include:

- Number of stakeholders engaged.
- Number of downloads/website hits by user group (e.g. Federal, State, regional, local or Tribal government, private sector, academic or citizen users).
- Ease-of-use or customer satisfaction survey scores.
- Number of listening/feedback sessions or number of comments received.
- Number of partnerships established or partnership opportunities identified.

Governance and Compliance Metrics

Governance and compliance metrics relate to the degree to which platform assets meet requirements and standards issued by authoritative bodies (e.g. International Organization of Standardization (ISO) Standards, FGDC metadata standards) or the degree to which stakeholders meet agreed upon roles and responsibilities (e.g. Platform stakeholder rules of engagement, leadership responsibilities, etc.). Some examples of governance and compliance metrics include:

- Percentage of data that are ISO/FGDC Standards compliance.
- Percentage of data with FGDC metadata compliance.
- Performance of each stakeholder in implementing roles and responsibilities.
- Participation by agency or participation by State.
- Percentage compliance with rules of engagement.

Portfolio Management Metrics

The Geospatial Platform portfolio will be measured and reported based on the following:

- Data maturity based on maturity model scores.
- IT dashboards.
- Investment review criteria and investment review scores.
- Implementation of roles and responsibilities specific to portfolio management (e.g. roles and responsibilities in the A-16 Supplemental Guidance for data portfolio management).

Platform Implementation Metrics

Geospatial Platform implementation will occur in a phased approach based on platform priorities, funding, and partners' ability to implement standards, requirements, roles and responsibilities and funding model. In order to track implementation progress, Platform implementation metrics will evaluate:

- Cost (baseline and variance).
- Schedule (baseline and variance).
- Scope (baseline and variance).

Performance against targets for metrics will be specific to each phase.

The Geospatial Platform is the next step in developing a truly integrated NSDI. The operational capabilities delivered through the Platform will be a pivotal step towards effectively managing place-based issues, utilizing geospatial resources, supporting many agency mission functions, and also providing data required for situational awareness and response for any unexpected event, such as the Gulf oil spill.

At the heart of the game-changing Geospatial Platform is sharing resources and services so investments are leveraged effectively. This fundamentally shifts the government's approach from creating individual mission focused capabilities, to leveraging services, data, and applications to which an agency's unique mission requirements can be added, and in turn leveraged by others. The vision and direction described in the modernization roadmap for the Geospatial Platform will result in improving transparency and accountability, enabling closer integration between geospatial assets and Data.gov, helping achieve efficient and effective management of resources, and engaging the broad geospatial community to shape the future of the NSDI.

6.6.   Time Boxes – Initial Implementation

The following time boxes show the proposed initial key actions and deliverables for the Geospatial Platform. These draft actions have been identified as opportunities for early success, but are not based upon a full requirements analysis. Additional potential opportunities are included in Appendices A-E of this document. These implementation actions will be further refined through consultation with stakeholders and continued analysis of requirements as the Geospatial Platform moves into implementation.

Time Box 1 (July 1 – September 30, 2010)	
Task	Deliverable
Provide publically available Gulf oil spill response mapping application as an initial operational capability prototype of the Geospatial Platform	Gulf oil spill Response Public Web Mapping Application
Provide the community with geospatial visualization capabilities using readily available thin- and thick-client standards-based web services, including those designated by the DoD as Enterprise Services. The DoD Geospatial Visualization Enterprise Solution (GV-ES) was developed based on open standards-based architecture and data services, and are specifically designed to leverage interoperable government-shared infrastructure to access authoritative and non-authoritative) data sources	Prototype Geospatial Visualization Capability

Time Box 1 (July 1 – September 30, 2010)	
Task	**Deliverable**
Determine how sharing Homeland Security Infrastructure Protection (HSIP) data can be optimized for both limited public and government dissemination via a shared infrastructure	Strategy for HSIP Data Hosting and Sharing
Identify base map and base map service options to be provided through the GeoPlatform.gov site	Base map Options for GeoPlatform.gov
Deploy a commercial and government-hosted Cloud Computing environment for a variety of Federal geospatial services and initiate collection of use statistics	Deployed Cloud Computing Environment
Document one or more software "Platform as a Service" suites to support common geospatial application requirements to promote re-use and to expedite common system (image) certification and accreditation in partnership with GSA, HHS and the FedRAMP activity. Initiate Federal-wide certification and accreditation for these images	Geospatial Cloud Computing Common Service Suite document
Obtain final approval of the Geospatial Segment Architecture Guidance document	Final Geospatial Segment Architecture Guidance document
Obtain FGDC approval and endorsement for existing open standards for geospatial data, services and applications	Approved Geospatial Standards
Develop an approach for registering shared data, services and applications within the Geospatial Platform	Common Registry Approach
Establish an interim Geospatial Platform Managing Partner with well defined responsibilities and roles necessary for successful implementation of the Platform	Project Management Approach
Collaborate with partners and stakeholders to define and establish an interim intergovernmental body to provide advice, recommendations and requirements for Geospatial Platform operations	Interim Intergovernmental Body
Develop draft Geospatial Platform Business Model, with input and feedback from the Federal partners, NGAC, and other stakeholders	Draft Business Model
Obtain final approval of the A-16 Supplemental Guidance document	Final OMB Circular A-16 Supplemental Guidance Document
Finalize inventory of data for consideration as part of the Geospatial Platform portfolio (per A-16 Supplemental Guidance)	Platform Data Portfolio Inventory
Develop and execute a strategy to conduct outreach and input with key stakeholders and partners on the direction of the Geospatial Platform	Communications Strategy, including Key Outreach Products

Time Box 1 (July 1 – September 30, 2010)	
Task	**Deliverable**
Enhance existing GeoPlatform.gov website by incorporating additional content, data and service offerings	Enhanced GeoPlatform.gov Website

Time Box 2 (October 1 – December 31, 2010)	
Task	**Deliverable**
Develop a strategy to implement a common geocoding service(s) capability to enhance functional utility of the Geospatial Platform	Geocoding Strategy
Explore establishment of national database pilot projects for the Geospatial Platform (e.g. parcels, land use/land cover, addresses)	Options for National Geospatial Data Pilot Projects
Determine the feasibility of acquiring and publically sharing a National Urban Change Indicator (NUCI) dataset using existing Federal data center investments	NUCI Strategy
Continue to collaborate across the Federal and extended stakeholder community on additional FSAM compliant data, services and applications capabilities required to enable the Geospatial Platform to meet business needs	Shared Data and Services Registered with the Platform
Explore inclusion of Sensitive But Unclassified (SBU) Segment Architecture activities into the Geospatial Platform effort	SBU Segment Architecture Strategy
Provide updated guidance language to Federal agencies for geospatial grants and contracts for implementation within their programs	Revised Geospatial Grants and Contracts Guidance
Select geospatial data for inclusion in the Geospatial Platform portfolio (per A-16 Supplemental Guidance)	Geospatial Data Inventory for Management within the Platform
Develop inventory of available tools to gather and analyze high-level requirements for data, services, and applications as part of the Geospatial Platform	Options for Requirements Applications
Develop selection criteria for inclusion of shared services and applications within the Platform	Selection Criteria for Shared Services and Applications

Time Box 3 (January 1 - September 30, 2011)	
Task	**Deliverable**
Provide a common geocoding service(s) via the Platform	Common Geocoding Service
Designate a permanent Managing Partner and final structure for intergovernmental body for management of the Geospatial Platform	Management and Governance Structure
Initiate discussions on a National study by trusted institution (e.g. NAPA) to include all stakeholders necessary to define a long-term governance model and	TBD

implementation strategy necessary for the Geospatial Platform	

Time Box 4 (October 1, 2011 - September 30, 2012)
In Time Box 4, which will encompass fiscal year 2012, the Geospatial Platform will move to full operations mode. A collaborative governance model will be in place; requirements will be collected and prioritized using a repeatable, transparent process; investments will be informed through a portfolio management approach; and a managed set of common data, services and applications will be provided though a shared infrastructure environment, based upon segment architecture design.

Appendix A.   Common Data, Services and Applications

A.1.   Definition

Common data, services and applications are recognized as official or trusted resources with a Federal lead agency steward (for data, "Dataset Manager" per A-16 Supplemental Guidance): The Federal lead agency verifies and vouches for the quality and reliability of the resources, which may include commercial resources. (Examples include: TIGER data, a geocoding service, commercial GIS software.) Common assets are managed as part of the Geospatial Platform portfolio and therefore must meet portfolio inclusion criteria (for data, see A-16 Supplemental Guidance).

Common Geospatial Data, Services and Applications are:

- Used by two or more entities to meet one or more geospatial business requirements (i.e. provide a common solution).
- Registered and discoverable through the Geospatial Platform portfolio.
- Provided in a standardized form, format, or process.

> **<u>Common</u> Data, Services and Applications:**
>
> A single solution, utilized by 2 or more agencies/partners, to meet:
>
> 1. A common requirement between agencies, or
> 2. Meet different requirements across agencies
>
> *<u>One solution – multiple uses</u>*

It is important to note that the term "common" as defined herein does not define the distinctions between authoritative, official, trusted, validated, or best available information. This will be taken into account through the metadata, data/services/applications registry and user interface components of the Geospatial Platform and be determined by an evaluation of the source, content, quality and intended use.
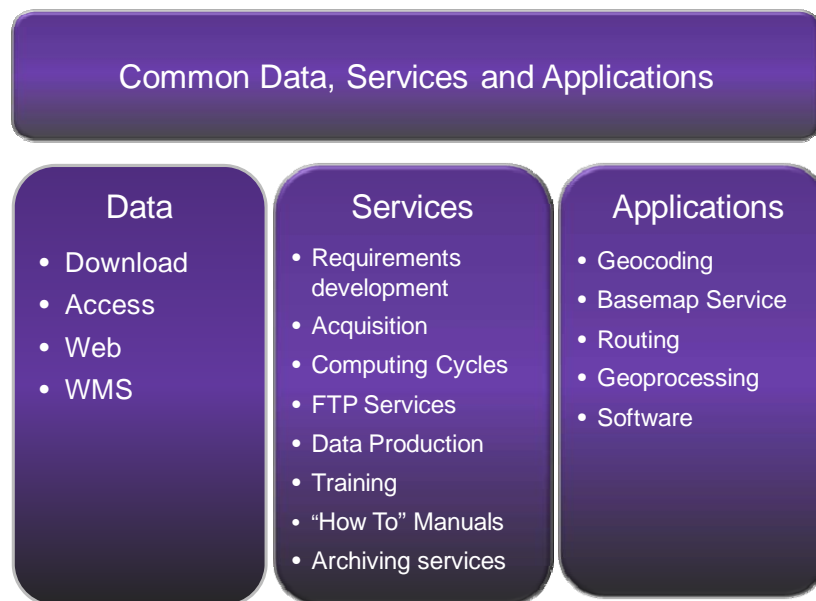
Figure A.1. Common Data, Services and Applications Offerings

Common Data

The common data component of the Geospatial Platform portfolio includes any geospatial data selected by the Managing Partner because it meets inclusion criteria outlined in the A-16 Supplemental Guidance and one used by two or more Federal agencies and partners to meeting their business requirements. Common data for the Geospatial Platform will provide the foundation for meeting a broad spectrum of customer business requirements and are often created or acquired in response to a need.

Geospatial data are developed and managed to meet specific format, content and structural requirements that are based on the intended use. As new requirements are identified by the national geospatial community, or new data identified that meet defined requirements, the format, content, structure and even the number of datasets required may change. For example, a roads dataset may be used to perform vehicle routing by one agency and the same dataset used as a base map by another agency. In either case, there is a single dataset utilized by multiple agencies

Common data include access to either original source data or data which have been integrated to meet requirements for consistency. The Census TIGER/Line files are an example of a single formatted dataset that is used across multiple agencies to render demographic information. There are many types of access methods to geospatial data including online web services, data download and all other data access methods.

Common Services

The common services component of the Geospatial Platform portfolio includes all other types of geospatial services that provide a consistent capability to users (i.e., tools and services that support the execution and management of geospatial business processes and offline services). While peripheral to the analysis capabilities that form the core execution of the Geospatial Platform's function, these common services are key underlying and complimentary efforts that must be included as part of the overall Geospatial Platform portfolio.

Examples of the types of support services include: requirements development and tracking tools, system computing cycles and file transfer protocol (FTP) services. Examples of offline services include: acquisition services (such as the Geospatial SmartBUY for geospatial software established through the Geo LoB), data production services and training. It is also envisioned that a hosting service will be one of the Geospatial Platform services offered for those agencies

without the required capacity to host or that have security concerns about hosting all of the data that are required by other agencies, stakeholders and partners.

Common Applications

The common applications component of the Geospatial Platform portfolio includes any computer-based set of tools or capabilities that enables a user to perform geospatial visualization or analysis, including software, online applications and geo-processing required by two or more agencies/partners/customers.

This category of applications includes a broad spectrum of analytical support generated to facilitate the government's delivery of services to citizens. Applications may leverage data services to conduct analysis or computations and return a result to the user or they may provide the user interface between and with other services. The utilization of open standards will allow these various components to communicate and interoperate effectively.

A base map visualization service from rendered and cached geospatial data, a routing tool, a geocoding service and geographic information system (GIS) software are all examples of common applications. A potentially high-impact common application for the Geospatial Platform is a consistent, standards-based metadata editor. As all Federal agencies must comply with the FGDC metadata standard and create metadata for every geospatial dataset, it makes sense to develop one common metadata editor and deploy it across agencies. Agencies can avoid duplicative software development by using a common application that allows for easy compliance. If desired, agencies can implement a customized style for the metadata editor tailored to their individual needs.

Data.gov is an example of a successful common application through which Federal geospatial data are made available to the public. Data.gov was established recognizing that data is an asset of the Federal Government and its citizens and provides public information for the public good. Efforts are underway to add additional geospatial functionality to the Data.gov infrastructure enabling users to view their selected data in a map.

A.2.   Objective/Purpose

The objective of Common Data, Services and Applications is to ensure that data, services and applications are discoverable, accessible, usable and obtainable by all. The Geospatial Platform will expose and leverage existing resources, providing a means to identify and eliminate redundancies among agencies, and at the same time enabling a geospatial market by opening up these common services and requirements.

Common data, services and applications are achieved when:
- Standards are adopted and implemented by providers of data, services and applications.
- Publication of the data, services and applications follow a common protocol for registry, publishing and discovery.
- The full spectrum of data is published with fully compliant metadata removing any debate about the most authoritative/appropriate dataset.
- Common applications are developed using core requirements of multiple agencies upon which user interface and branding can be modified if necessary to better meet customer requirements.

A.3.   Approach/Strategies

The Geospatial Platform will meet business needs of its customers, support transparency and access to information, and empower the Nation's citizens through access to a range of geospatial data, services and applications. Federal leadership must assist in lowering the barrier to publish data, services and applications by ensuring a common method

and approach is adhered to by the community. The Geospatial Platform will implement an open government approach to standards based services publication and will adopt and enforce the use of open and interoperable standards to simplify discovery, access and dissemination of data, services and applications. The Geospatial Platform will then be populated with common data, services and applications. As the Geospatial Platform matures, a number of guidance documents and how-to manuals will be produced to encourage participation by all members of the national geospatial community in the effort.

To achieve the Geospatial Platform objectives, the processes and frameworks will be developed to:
- Endorse and enforce standards.
- Identify/inventory/catalog available geospatial data, services and applications.
- Identify common business requirements they meet or are utilized to support.
- Identify new or evolving common business requirements that can be supported by geospatial assets.
- Identify the functions, the services and applications performed.
- Identify those data, services and applications that are utilized by multiple agencies to meet common business needs.
- Establish the mechanisms to govern, operate, evaluate and service the common components.

A.4.   Priorities

The Geospatial Platform priorities with respect to common data, services and applications include:
- Discovery of geospatial data, services and applications.
- Initial inventory and selection of geospatial data, services and applications (also see Portfolio Management objectives and priorities).
- Endorsement and enforcement of standards.
- Identify priorities for new common data, services and applications.

Discovery of geospatial data, services and applications
A fundamental goal of the Geospatial Platform is to enable providers and customers to contribute, access and leverage data, services and applications, and provide a clear method for discovering valuable resources. Common and discoverable data, services and applications are often the starting point for identifying data, services and applications that have broader value to multiple partners and may be included in the Geospatial Platform portfolio and delivered as common resources. One Geospatial Platform service will include evaluating the data, services and applications, and the requirements they are designed to fulfill.

While not all data, services and applications will be included in the Geospatial Platform portfolio, all Federal investments in geospatial data, services and applications should be discoverable and inventoried as part of the national strategy. The Geospatial Platform will encourage all Federal agencies and partners to share and leverage their geospatial assets.

Federal Executive branch agencies should publish metadata for all geospatial datasets and applications to Data.gov, the authoritative repository for Executive branch data. Another system service will be developed for non-Executive Federal and non-Federal data and applications as part of the Geospatial Platform. These systems will work together to ensure that all geospatial data and applications are discoverable to customers.

An initial asset inventory and selection of geospatial data, services and applications for the Geospatial Platform portfolio, will need to occur in order for the Managing Partner to know what geospatial data and applications exist and

how they support the business requirements of the Federal Government and its partners. The registry developed using Data.gov and its counterpart (for non-Executive Federal and non-Federal data and applications) will serve as the initial government wide inventory of geospatial data, services and applications. This initial inventory activity will be conducted to create a baseline Geospatial Platform portfolio, which will be routinely maintained on at least an annual basis.

From this initial inventory, geospatial data, services and applications will be selected for inclusion in the Geospatial Platform portfolio. Processes for data selection are outlined in the A-16 Supplemental Guidance, whereas similar processes for selecting services and applications will need to be developed (see Portfolio Management priorities).

Initial inventory and selection of geospatial data, services and applications
To select assets for the Geospatial Platform portfolio, the Managing Partner must know what geospatial data and applications exist and how they support the business requirements of the Federal Government and its partners. The registry developed using Data.gov and its counterpart (for non-Executive Federal and non-Federal data and applications) will serve as the initial government wide inventory of geospatial data, services and applications. This initial inventory activity will be conducted to create a national geospatial inventory which will be routinely maintained on at least an annual basis.

From this initial inventory, geospatial data, services and applications will be selected for inclusion in the Geospatial Platform portfolio. Processes for data selection are outlined in the A-16 Supplemental Guidance, whereas similar processes for selecting services and applications will need to be developed (see Portfolio Management priorities).

Endorsement and enforcement of standards (also see Segment Architecture)
An open government approach to standards based services publication will fuel the demand for more geospatial data and robust application development as more and more location based services are developed. Through the FGDC, the Geospatial Platform will adopt and enforce open and interoperable standards to leverage the work already accomplished by national and international standards organizations. Standards will simplify discovery, access and dissemination of data, services and applications through the Geospatial Platform. Shared standards that shall be formally evaluated for adoption by the Federal Government include, but are not limited to:
- Geospatial data publication standards as described by the Open Geospatial Consortium (OGC), the International Organization of Standardization (ISO), the International Committee for Information Technology Standards (INCITS) L1 committee that deals specifically with geospatial standards, and the FGDC including but not limited to the Web Services (features, map, processing, coverage, etc.), Location Services, Metadata, Registries, Data Quality and other applicable standards specifically dealing with geospatial data.
- All published data, services and applications shall include an open Application Programmers Interface (Open API). At a minimum the API shall allow searchability by the domain of geospatial search properties (e.g. contains, contained within, near, intersects etc).

Identify priorities for new common data, services and applications
Initially, the Geospatial Platform will leverage *The National Map* requirements study and the Geo LoB surveys to provide priority recommendations for new common data, services and applications. Geospatial Platform priorities are further supported by specific studies conducted by the National Research Council (NRC), selected Federal agencies and the National States Geographic Information Council (NSGIC). The results of these studies and surveys are outlined in Table A.1 below.

The Geo LoB surveyed agencies to identify geospatial services and applications required to meet business needs. The Geospatial Platform will leverage that survey and aim to provide the identified priority applications. The highest

priority identified by 42% of agencies was a metadata editor that is FGDC compliant, web enabled, flexible and customizable. Also highly desired were a map tracker (33%) and an interactive mapping service (30%).

Table A.1. Potential opportunities for common data, services and applications

Geospatial Data	Citation Reference	Immediate	Mid Term
Imagery	TNM, NGAC, LLR	TNM-Imagery	IFTN
Elevation/LiDAR	TNM, CSWG, NGAC, LLR	TNM-NED	NEEP
Public Streets and Roads	TNM,	TIGER	
Surface Water	TNM,	TNM-NHD	
Civil Boundaries	TNM,		
Parcels	TNM, NGAC, LLR		
Land Cover	TNM,		NLI
Geographic Names	TNM,	TNM-GNIS	
Public Land Survey System	TNM,		
Vertical and Horizontal Control	TNM,		
Federal and Native American Land Boundaries	TNM,		
Address Points	TNM, CSWG		
National Wetlands Dataset			USFWS
Geospatial Platform Services			
Cloud Computing	CSWG		
GPS receivers	CSWG		
Geocoding Service	CSWG, TNM		X
Instruction/Guidance/How-to manual		How-to manual	
Common Data Access URL			X
Remotely Sensed Land Cover Change Det			X
Strategy for Service Discovery			X
Geospatial Applications			
Land Cover Change	CSWG,		
Map Viewer/Visualization	CSWG, TNM	Palanterra™	
Meta Data Editor	CSWG		
Map Viewer for Mobile Platform	TNM		X
Coastal Communities			X
Tightening Mortgage Practices			X
Cities in Transition			X

(TNM) The National Map Customer Requirements: Findings from Interviews and Surveys, OFR 2009-1222, U.S. Department of the Interior, U.S. Geological Survey, December, 2009
(CSWG) Common Services Work Group Survey of Federal Agency Geospatial Requirements, Summary of Results, February, 2010
(NGAC) National Geospatial Advisory Committee, Summary of key decisions/recommendations, November, 2009
(LLR) National Geospatial Advisory Committee Messaging Committee Lessons Learned and Recommendations

Appendix B.   Shared Infrastructure

B.1.   Definition

The Geospatial Platform shared infrastructure refers to joint development, operations, maintenance and/or other uses of the same IT components and investments by multiple Federal departments and agencies. Shared Infrastructure supports the hardware, networks and platforms that common data, services and applications operate from, including portals.

A shared infrastructure for IT includes both physical and logical components that can be leveraged by multiple Federal agencies. The physical shared infrastructure includes (but is not limited to):
- Data centers and data repositories.
- Networks, including Internet and intranets.
- Host platforms for applications, including portals and services.

Logical shared infrastructure includes (but is not limited to):
- Network routing services.
- Access control and security.

The foundation for defining a shared infrastructure is the Federal Geospatial Segment Architecture (FGSA), which is based on the Federal Segment Architecture Methodology (FSAM). The FGSA describes the overall governing architecture for Federal geospatial investments, including business, technology, data, services and performance reference models. The Geospatial Platform shared infrastructure identifies those components of the FGSA that can be leveraged, reused and shared by the geospatial missions of agencies and partners.

B.2.   Objective/Purpose

The objective of a shared infrastructure for the Geospatial Platform is to reduce costs while improving efficiency for geospatial information sharing. A shared infrastructure allows multiple agencies and partners to leverage common investments. In addition to reducing costs, a shared infrastructure can simplify access control requirements while improving overall security by reducing the number of physical components needed to perform operations. Other benefits of shared infrastructure include enhancement of collaboration and services. The future state of shared infrastructure would support federated databases, which allow partners to contribute their data to larger, shared repositories where many users are able to combine and leverage them. These federated databases, for example, would create a "quilt" of parcel data for the Nation by combining content from State and local partners. Key drivers for this activity are identified in the Fiscal Year 2011 Budget of the United States Government, Analytical Perspectives, Section 19, Information Technology (page 321). These drivers include:

- Modernizing Federal and national IT infrastructure to be efficient and effective.
  - Centralize provisioning of IT services for non-military agencies.
  - Implement cloud computing.
  - Consolidate data centers.
- Transparency and Participation in Governance.
  - Data.gov.
  - Broadband access for Americans.
- Security and Privacy.
  - Securing government systems.
  - Identity management.
  - Protecting privacy.

In addition, the Geospatial Platform will support the President's Information Sharing Environment (ISE). The goal of the ISE is to assure that all authorized users can access all required data and information at any time from any authorized device.

B.3.   Approach/Strategies

The Geospatial Platform will leverage common services, guidelines and strategies developed under the auspices of the Federal Chief Information Officers (CIO) Council and OMB. These include the Federal Identify Credentialing and Access Management (FICAM) Roadmap, the Sensitive But Unclassified/Controlled But Unclassified Information (SBU/CUI) Interoperability Initiative Segment Architecture and activities to consolidate data centers across the government enterprise. Whenever possible, the Geospatial Platform will rely on shared Federal IT infrastructure to assure it is a part of the Federal mainstream IT.

Geospatial data developed by the government have broad use across a wide, interdisciplinary range of missions and needs. To be effective the Geospatial Platform needs to recognize different needs and capabilities between customer segments, in particular, how data, services and applications are to be used. For many customers, simple view only capabilities may be required, in other cases, download of very large datasets and access to high level computing power may be required. The Geospatial Platform shared infrastructure will address key customer segments.

B.4.   Priorities

The shared infrastructure of the Geospatial Platform will develop a shared infrastructure that:
- Is robust and reliable to host and deliver common data, services and applications.
- Provides geographic information system (GIS) capability for agencies that need geospatial tools but do not have access to them.
- Provides role-based access; for example, implementing FICAM guidance for access control, including the PIV-I standards for non-Federal users, is a key priority to assure data security and support the SBU/CUI information sharing environment.
- Maximizes the value of cloud computing. The Cloud Computing Model is a major component of the Federal Government's effort to achieve efficient and effective IT. The FGDC is currently working with the Federal CIO Council to develop guidance for the implementation of cloud computing.
- Supports GIS capability for offices that have integrated tools in a collaborative inter-agency mission.

- Supports the direction of the broader government IT community, including but not limited to Data.gov, USASpending.gov, Broadband for Americans, identity management, data center consolidation and National Information Exchange Model (NIEM).

The Geospatial Platform will develop an understanding of "as-is" geospatial infrastructure and user needs to help define "to-be" infrastructure.

Appendix C.   Segment Architecture

C.1.   Definition

Segment Architecture, as promoted through the Federal Segment Architecture Methodology (FSAM) is a process-driven approach to designing and deploying large government computing components in the context of a broader agency or government enterprise architecture. The Geospatial Platform requires such a methodology to design an "actionable" solution architecture that can be readily deployed by agencies that collaborate on geospatial data, services and applications. The draft Geospatial Segment Architecture Guidance[8] document uses the FSAM to explore the as-is and to-be Federal environment and identifies opportunities for the Geospatial Platform. The draft Geospatial Segment Architecture Guidance will serve as the key resource for guiding the Geospatial Platform segment architecture.

The Geospatial Platform will coordinate the architectural 'blueprint' for a common geospatial data environment defined by business requirements. The architecture documents common business requirements that drive the identification of service and data resources of the Geospatial Platform to support mission needs of many agencies and stakeholders. The resulting solution architecture should be implemented by agencies using common, secure, interoperable and scalable open-standards based technologies.

The description and documentation of the Geospatial Platform's Segment Architecture is intended for three different audiences, Executives, Architects and Stakeholders. The Roadmap provides Federal executives and decision makers with a common understanding of the Geospatial Platform architecture goals and principles and outlines initial activities to begin to transition to the target environment. Future documents are envisioned to leverage and apply the resources of the Federal Enterprise Architecture (FEA). The Geospatial Profile and the draft Geospatial Segment Architecture Guidance document the needs of agency architects and stakeholder agencies, respectively, in response to Geospatial Platform requirements.

C.2.   Objective/Purpose

The Geospatial Platform requires a segment architecture activity to identify solution engineering requirements from Geospatial Platform requirements into a consolidated, interoperable and open standards-based technical architecture, based upon the Foundational Principles listed below. The target technical architecture will be adopted and deployed by providers for the discovery and exchange of standards-based geospatial data, services and applications.

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8 The draft Geospatial Segment Architecture Guidance is available at: http://www.fgdc.gov/geospatial-lob

C.3.   Approach/Strategies

Foundational Principles that form the basis for an efficient and cost-effective Geospatial Platform architecture include:
- Agreement on a common architectural style (i.e. a service-oriented architecture).
- Support for open standards for data content, format, protocol and service accessibility.
- Commitment to a design process that can be readily deployed by agencies as a solution architecture, while allowing partners to choose their own development methodology.
- Transparency of design, deployment and operation.

The Geospatial Platform segment architecture common engineering solution approach will:
- Facilitate the design, development and deployment of an effective and efficient Geospatial Platform segment architecture.
- Document common business process, service component, technology (standards) and data and performance requirements.
- Enable the execution of a practical and operational community geospatial segment architecture based on common principles as solution architectures within broader agency architectures.

The target Geospatial Platform architecture will be established as a services-oriented architecture (SOA) based on fundamentals of business focus and alignment using common, secure, interoperable and scalable open-standards based technologies. It will be designed to provide common geospatial capabilities for data, services, applications and infrastructure in support of stakeholder missions, business needs and citizen access. Using the Geospatial Segment Architecture Guidance document, the Geospatial Platform architecture will address each of the five reference models of the Federal Enterprise Architecture – Business, Data, Technical, Service Component and Performance – through application of the FSAM. When applied, these common engineering solutions provide efficiencies and economies within the respective agencies as well as contribute to the federated Geospatial Platform.

Segment Architecture activities shall support relevant current Federal priorities including accountability and transparency, Data.gov and the ISE, in the context of FEA guidance and methodologies.

Figure 1 provides a logical view of the anticipated Geospatial Platform architecture development process. Geospatial Platform requirements are processed and integrated following the methodology presented in the Geospatial Segment Architecture Guidance. This process will help develop documented consensus on the common business processes, data and service requirements relevant to supporting the full Geospatial Platform.

An architectural blueprint can then be developed that formalizes the agreements on standardized data, services, applications and process definition that can be translated into tangible service offerings (solution architectures). The proposed architecture exists within a broader multi-tier context. The Platform focus is on the Platform tier, which is underpinned by standardized infrastructure tier capabilities (network, storage, security, provisioning) and is accessed by clients in the application tier. It is anticipated that the Geospatial Platform may define suites of standardized operations (shown by the purple horizontal line) that bundle specific requirements for infrastructure, data, process and services into service patterns that support shared business processes and can be deployed or procured in multiple locations, as needed. Examples of this may include geocoding services, catalog/registry services, visualization and data access services.

One of the core principles of a coordinated geospatial architecture, formalized in the FEA and FSAM, is the identification and adoption of relevant technical geospatial standards within the community. The benefits of specifying common standards for adoption within the Platform context include: identified standards are developed by voluntary

consensus standards organizations with a commitment to maintenance and review; standards organization membership and requirements reflect the interests of the government in geospatial interoperability; adoption of standards by industry and government increases the availability of deployed, compatible, software solutions; adoption of common standards facilitates immediate geospatial data exchange between agencies and between the government and its stakeholders. Standards are defined in the FEA Geospatial Profile and Architecture Guidance Document annexes to specify documentation of data content and structure, metadata, format, and web service protocols for maximum interoperability within the Platform environment.
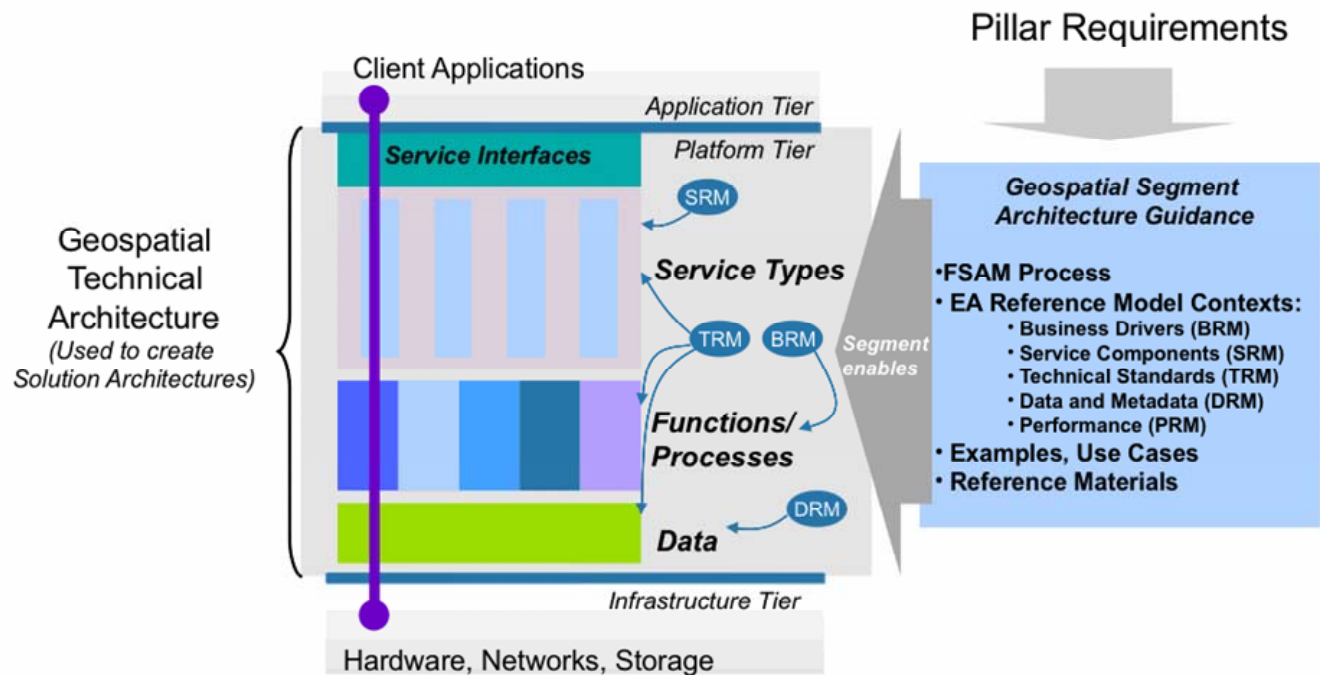

Figure C.1. **Geospatial Platform conceptual architecture and role of FEA**

C.4.   Priorities

The Geospatial Segment Architecture Guidance provides a context, or rubric, through which all Geospatial Platform requirements can be coordinated, resulting in a notional architecture that can be readily deployed by agencies. Potential activities/opportunities that are central to the shared architecture include:

- Formal endorsement and approval of the Geospatial Segment Architecture Guidance.
- Requirements-based identification of common, high priority geospatial business activities and processes (i.e. data, services and applications) for inclusion and/or development of the Geospatial Platform Initial Operating Capability.
- Review and update the as-is technical architecture defined by the Geospatial Segment Architecture Guidance and develop a common to-be federated infrastructure based on a SOA approach.
- Review and update the necessary geospatial open standards from the Geospatial Segment Architecture Guidance reference annexes that are required to deploy the Geospatial Platform.
- Assure that the technical architecture design supports deployment of geospatial data, services and applications using a cloud computing model as a major part of the strategy to achieve efficient and effective geospatial IT.
- Develop consensus and publish formal data content models for national geospatial data assets, including preparation of a data dictionary, data types and standard metadata to promote data acquisition, publication, conversion and use.

- Determine how the quality of data, service, or application, as defined by the customer, can be represented and used within the technical architecture.
- Document requirements for Data.gov to support registration, discovery, evaluation and visualization of geospatial data in the context of operational needs of the Geospatial Platform.
- Address requirements of Geospatial Platform data, services and applications with respect to Federated Identity, Credential and Access Management (FICAM).
- Accommodate architectural support for common applications compatible with the multi-agency Common Code Base Initiative - i.e. migrate Palanterra-based geospatial client/service functionality to a services-based approach to foster efficiency and reuse.
- Drive and anticipate geospatial capabilities in Data.gov to include geospatial and temporal search, index and cataloguing capabilities currently in Geodata.gov but required for the common USASearch.gov environment.
- Drive and anticipate augmentation of Data.gov capabilities to support standards-based service and applications documentation and discovery coupled with registered and approved geospatial data resources.
- Support development of an IT Dashboard (e.g., http://it.usaspending.gov) for alignment and reporting of cost/schedule/performance as part of the Geospatial Platform program management oversight and transparency to the geospatial community.
- Support quantification of stakeholder business demand for Geospatial Platform data, services and applications through monitoring the use of Geospatial Platform-affiliated data, services and applications.

Appendix D.   Governance

D.1. Definition

The governance structure for the Geospatial Platform is the process by which Geospatial Platform stakeholders, including customers, are afforded an opportunity to shape its structure, functions and capabilities. This governance structure includes people, policies and operational processes.

D.2. Objective/Purpose

The goal of creating a defined governance structure is to provide a standardized means to increase value to the national geospatial community, the programs across all levels of government and ultimately the American citizens who are customers. The governance structure will involve a phased implementation approach, which will parallel phased implementation of the Geospatial Platform itself, designed to eventually engage all stakeholders and fulfill the overarching vision of the Platform. Over time, the number and variety of stakeholders involved in governance will grow as new phases are pursued. Each phase will address a specific capability with a unique set of challenges and may have Business Models that vary across phases. Over time, the phases will lead to a modular approach to fully building out the overall vision for the Geospatial Platform, which will have the broadest practical governance structure.

There are two primary objectives in creating the Platform governance structure. The first objective is to outline the requirements to successfully implement the governance of the Geospatial Platform in a coherent and sustainable way. After the requirements for successful governance are identified, the primary objective will shift to operationalizing the approach by engaging Federal, State, regional, local and Tribal government stakeholders. To satisfy these objectives, a clearly defined governance approach and roles for implementation must be developed so that stakeholder groups understand the governance structure and their roles and responsibilities within the structure at each phase of its development.

The governance structure includes drivers that are crucial to developing the Geospatial Platform:
- Improving the framework to address the requirements of Federal, State, regional, local and Tribal agencies.
- Prioritizing investments based on the most widely shared and most significant business needs of government.
- Enhancing interagency cooperation.
- Enhancing intergovernmental cooperation.
- Saving taxpayers money through more effective leveraging of intergovernmental activity.
- Increasing transparency and accountability.
- Creating an integrated place-based framework for addressing public policy challenges.
- Acknowledging and aligning varying roles, capabilities and interests of parties with a stake in the Geospatial Platform.
- Building and maintaining credibility, trust and relevance amongst non-Federal stakeholders.

D.3. Approach/Strategies

Scope of Governance: Platform implementation and sustainment
The first objective of the governance structure will be to outline the necessary governance requirements to successfully implement the Geospatial Platform. To that end, it will be important to identify and define components where governance applies. The governance structure will ensure that aspects of Geospatial Platform work requiring governance activities are clearly defined and that the proper governance structures are in place to ensure success.

One aspect of effective governance will be to define the "rules of engagement" for the Geospatial Platform. As all participants and stakeholders may be both partners and customers, ensuring compliance is critical to Platform success. Topics requiring compliance assurance may include:
- Data Content Standards.
- Metadata Standard.
- OMB Circular A-16 and A-16 Supplemental Guidance (Federal agencies only).
- Expectations with respect to data sharing/reciprocity.
- Expectations with respect to donating expertise within the community to achieve common goals.
- Standards for cyber security/access protocols/credentialing of Platform users to protect legitimate users.
- Managing relations with other NSDIs.
- Division of labor with respect to managing operations and maintenance of the Geospatial Platform.

While disclosure of non-compliance may often be sufficient to induce the desired behavior, the governance structure will need to define the consequences of non-compliance and the means for ensuring commitments. As such, it will be necessary to develop mechanisms to ensure that partners adhere to the agreed upon standards and "rules of engagement" included in negotiated contractual, license or service-level agreements.

To maximize effectiveness, the Geospatial Platform will leverage current interagency and intergovernmental initiatives such as Data.gov, the Geodata.gov portal and Geo LoB products and processes. Identifying and evaluating best practices and lessons learned from these initiatives will help to inform and strengthen governance of the Geospatial Platform.

After the initial governance requirements for implementing the Geospatial Platform are outlined, the primary focus will be to create a governance framework to effectively define and engage all members of the stakeholder community. This framework will help to foster more effective intergovernmental geospatial priority setting. The communities of interest to consider include:
- Federal agencies.
- State agencies.
- Regional government organizations.
- Local agencies.
- Tribal governments.
- Academia/Non-profit organizations.
- Private sector organizations.

As with other components of the governance structure, this process will unfold through a phased approach. The ultimate vision is to be a national capability with shared governance. Suggested ways to engage non-Federal entities include:

- Establish an interim Intergovernmental Subcommittee with diverse participation/representation until a full intergovernmental governance approach is developed.
- For each phase, identify means to engage specific non-Federal communities of interest with a clear stake in the phase in question. For instance, the first phase is likely to involve the current Gulf of Mexico oil spill, so the Geospatial Platform could work to engage coastal states in the Gulf of Mexico, academics, etc.
- Create appropriate means to gather customer requirements for each phase that will include targeted non-Federal participation. This could potentially be coordinated through the National Geospatial Advisory Committee (NGAC).

Outcomes include:
- Better public policy decisions.
- Faster public policy decisions.
- Better integrated public policy decisions.
- More efficient use of government funds.

Implementation of Governance: Implementation strategy

A phased governance approach will be developed and implemented to build toward the Geospatial Platform's overarching vision. Each phase will contribute to reaching the overarching vision like independently created modules that nonetheless fit together because each was conceived with the broader vision in mind. Each phase may address a different problem with a unique set of challenges so that different Business Models could be developed and deployed to address the problem. Eventually, enough different problems will be identified and means to address those problems will be developed to lead toward a unified intergovernmental governance solution to manage the realized overarching vision. Generally, each phase should be progressively more ambitious so that lessons learned from previous phases can inform the risk management approaches in the next phase. The end goal is to incrementally develop a platform capability that adds value in a wide variety of circumstances. Generally, each phase would:
- Define an offering that produces or delivers something to solve a specified business problem.
- Define the business institution that actually produces and manages the offering.
- Define the customers of the offering.
- Provide for internal management of the business institution to comply with applicable Federal IT, acquisition, performance, human resources and financial policies and reporting.
- Comply with the intent of the President's 2011 Budget language.

Outcomes include:
- Overarching vision for the creation of the Geospatial Platform.
- Phased approach to reach the vision for the Geospatial Platform.

Governance Approach: Governance strategy principles

Because the Geospatial Platform describes new processes for interactions within the community, a clearly defined a strategy for these interactions is an important component of success. This section discusses concepts that are important to follow in creating the Geospatial Platform governance structure, including specific roles and responsibilities.

First, the Geospatial Platform will operate under the federated approach. While this approach necessarily respects agency-specific statutory authorities, it nonetheless sets expectations that agencies will exercise their discretion within statutory parameters consistent with the rules of engagement for the Platform, so as to increase the overall efficiency and effectiveness of the Federal Government. It also allows for joint funding to meet operational needs. An example

of this approach is the Alaska Elevation data effort, which is a joint effort of the Department of the Interior (U.S. Geological Survey and Bureau of Land Management), Department of Defense (U.S. Northern Command and National Geospatial-Intelligence Agency), U.S. Department of Agriculture, National Oceanic and Atmospheric Administration and the State of Alaska.

Second, the Geospatial Platform, initially, will capitalize on existing geospatial institutions and clearly define the future roles of existing governance bodies. The primary focus areas of Geospatial Platform governance will be to address geospatial policy, operation and coordination with Federal and non-Federal stakeholders. To those ends, the FGDC Steering Committee will serve as the primary policy body. The FGDC Executive Committee will serve as the senior management operational and coordination authority for that policy body. The Intergovernmental Body (Section 5) will serve as the primary external advisory body to establish a mechanism for non-Federal intergovernmental coordination.

Third, the governance strategy must be "workable" and allow for performance based evaluation (Section 5.6) of geospatial production against formal requirements. The Geospatial Platform will identify the criteria for performance based evaluation. Having performance based evaluation criteria compared to an established baseline allows for more informed identification of needs and performance for all managers within the community.

Outcomes include:
- Clear understanding of how each agency relates to the governance structure of the Geospatial Platform.
- Explicit expectations of each agency with respect to compliance with Platform rules of engagement.
- Federal, State, regional, local and Tribal governments are identified and satisfied to the extent possible.
- Degree of compliance with intent of the President's 2011 Budget language to address the requirements of State, local and Tribal governments.

Governance Roles: Entities
A key component of the Geospatial Platform governance structure will be clearly defined roles and responsibilities for stakeholder groups. The Geospatial Platform represents a new business institution, which will require the dedication of full-time support staff, as well as other forms of contribution. This section identifies geospatial communities that will facilitate the updated Geospatial Platform governance structure approaches and strategies.

FGDC Steering Committee/Executive Committee
The FGDC Steering Committee will serve as the primary policy body. The FGDC Executive Committee will serve as the senior management operational and coordination authority for that policy body.

FGDC Coordination Group
The FGDC Coordination Group will help shape the requirements for the Geospatial Platform based on agency-specific needs and priorities and also assess technical feasibility of proposed offerings. The FGDC Coordination Group will be the primary operational representatives to ensure their agencies are fulfilling their roles.

Geospatial Platform Managing Partner
Because the Geospatial Platform represents a new business institution, new capabilities will be required to support the new institution. A new body, the Geospatial Platform Managing Partner, will implement direction, recommend and/or assign resources and create and track performance metrics for upward reporting for the Platform. The focus of the Geospatial Platform Managing Partner needs to be aligned with the mission and vision of the Geospatial Platform as described in the Roadmap and be answerable to the FGDC Steering Committee, its Executive Committee and ultimately OMB.

Intergovernmental Subcommittee

The to-be state of the Geospatial Platform is a national effort with participation from State, regional, local, Tribal and non-government stakeholders. Therefore, the Geospatial Platform will quickly establish an intergovernmental subcommittee with representation from all stakeholder groups. This is an interim solution, and will be replaced by an appropriate end-state entity as a framework for regular and ongoing coordination with these external partners and stakeholders is developed.

Outcomes include:
- Clear policy or charters for each entity involved in governance of the Platform.
- No ambiguity or misunderstanding of the roles and responsibilities for each stakeholder community.

D.4. Priorities

The first priority of the governance structure will be to establish the requirements to implement the Geospatial Platform. After the requirements for successful governance are outlined, the primary objective will shift to working to fully engage Federal, State, regional, local and Tribal agencies and with private and non-profit stakeholders as appropriate. The priorities for the governance structure are:

- **Platform implementation and sustainment**
  The initial priority will be to establish the requirements necessary to implement the Geospatial Platform. In order to do this, the overall vision for the Platform needs to be developed. Once the overall vision for the Platform is developed, the phases that will build into that vision need to be developed. This will also entail defining in advance how the different phases will eventually integrate with one another before they are built.

  After the development of the initial vision for the Geospatial Platform and implementation plan, the focus will shift to other necessary governance infrastructure for implementation such as identifying "touch-points" with other Platform Pillars, defining the rules of engagement, identifying means for leveraging intergovernmental initiatives and defining a funding model for the Platform.

- **Federal and non-Federal involvement in the Platform**
  Once relevant parties have defined initial requirements to implement the Geospatial Platform, the second priority will be to organize Federal partners (through the FGDC Steering Committee and Executive Committee) and non-Federal partners (which the FGDC Steering Committee would facilitate through NGAC, National States Geographic Information Council (NSGIC), National Association of Counties (NACO), etc.).

  After organizing stakeholders, exploring options for an intergovernmental needs assessment will be the next priority. To carry out the needs assessment, the governance structure must establish common terms and definitions and enforce consistent adherence to those terms. Only with such intergovernmental consistency will a survey of the intergovernmental geospatial community be useful. A qualitative assessment in FY 2011 using focus groups or doing an analysis of the data available through the 50 States Initiative will provide some initial information. After the definitions of a more robust set of terms are established, a quantitative survey would be conducted in FY 2012 and regularly maintained thereafter. In order to define the Federal agency needs, it may be necessary to modify OMB Circular A-11 so that it is for the first time possible to track Federal geospatial financial obligations through the object class structure in Federal agency financial systems.

Outcomes include:
- Organization of Federal partners.

- Engagement of non-Federal partners.
- Integration of Geospatial Platform priorities into FY 2012 budget cycle.
- Improved understanding of intergovernmental needs.

Appendix E.   Portfolio Management

E.1. Definition

Definition
Geospatial Platform portfolio management is defined as the set of processes used to prioritize and select assets, and allocate resources of the Geospatial Platform. This process also supports management and performance evaluation of geospatial assets to which resources are applied to help ensure the appropriate combination of assets are available to best accomplish organizational goals and objectives of customers. The Geospatial Platform portfolio management process supports investment decisions for four categories of geospatial assets: data, services, applications and infrastructure.

Scope
The Geospatial Platform portfolio consists of geospatial assets that are deemed "significant/critical/necessary" for meeting crosscutting (i.e. common mission needs) of the Federal Government or its State, Tribal and local partners and stakeholders. Assets are selected (or rejected) for inclusion in the Geospatial Platform portfolio through a portfolio management process that includes the application of selection criteria to assess how the assets meet common requirements and business needs across customers, and how well the assets support the strategic goals and objectives of the Geospatial Platform.

E.2. Objective/Purpose

The overarching objective for the Geospatial Platform portfolio management process is to maximize enterprise value by investing in the right assets at the right time and thus obtain the best possible strategic impact of each investment.
Geospatial Platform portfolio management will support senior level decision making by:
- Guiding the priority setting, selection, and balancing of portfolio assets to ensure that the overall investments align with the strategic goals and highest organizational priorities of the enterprise and partners.
- Allowing timely assessments of asset selection, prioritization, and performance, as well as the identification of any portfolio-level issues and/or risks that might impact performance.
- Enabling transparent, timely and consistent communications to decision makers and the public on the progress for completing the platform, any changes to the platform, and impacts of these on the Geospatial Platform portfolio.

Specific objectives for the portfolio management process are:
- **Objective 1:** Adopt a portfolio management framework that enables the Managing Partner to select assets that will best support projected Geospatial Platform needs, capabilities and projected outcomes and disinvest in assets which do not support the desired outcomes for the Geospatial Platform.

- **Objective 2:** Identify the most important crosscutting strategic endeavors and outcomes for the Geospatial Platform.
- **Objective 3:** Identify and adopt a series of best practices and tools for each step of the portfolio management process.
- **Objective 4**: Discover and adopt appropriate measures to control, monitor and evaluate performance of existing and/or planned assets within the Geospatial Platform portfolio.
- **Objective 5**: Determine the most appropriate maturity, investment and readiness models to use as part of the Geospatial Platform portfolio management process.
- **Objective 6**: Acquire/adapt a portfolio management system for enterprise level management and as a common service available to individual assets for tracking.
- **Objective 7:** Apply a portfolio management process framework so an initial Geospatial Platform portfolio is chosen and subsequently controlled and monitored for performance.
- **Objective 8:** Evolve the content of the Geospatial Platform portfolio over time as available asset maturity increases and adjusts to strategic goals and events necessitating change.

Portfolio Management Drivers

Drivers for developing the Geospatial Platform portfolio management process include**:**

- Improving management of Geospatial Platform capabilities and assets to meet the business needs of the customers, including using resources more efficiently in an era of decreasing budgets across all levels of government.
- Providing access to critical geospatial data, services and applications currently inaccessible or difficult to obtain.
- Responding more promptly and accurately to inquiries made to Federal agencies on the scope, cost and completion progress for completing the NSDI.
- Incorporating portfolio and performance management approaches to leverage resources and better support outcomes for mission-based goals, transparency and accountability.
- Ensuring compliance with the transparency, open government and effective and efficient information sharing initiatives.

E.3. Approach/Strategies

Establishing a portfolio management process gives the Geospatial Platform a clear structure for transforming current business priorities into a portfolio of assets needed to support mission execution. The Geospatial Platform portfolio management process will adhere to best practices and will utilize management tools that can be adapted to reflect the organizational governance of the Geospatial Platform. In addition, the portfolio management process will include an geospatial investment review process through which the FGDC Steering Committee considers existing and planned assets while assessing future initiatives and changing business drivers.

All portfolio asset investments will follow a lifecycle management approach (for data, view the A-16 Supplemental Guidance; for services, applications and infrastructure, the OMB Circulars A-11 and A-130). Geospatial asset selection criteria are critical for effectively and efficiently identifying the components of the Geospatial Platform portfolio and should be reflected in a lifecycle management framework from the inception of the Geospatial Platform.

In addition, best practices and associated decision tools will be established and adopted for each step of the portfolio management process and the lifecycle management approach. Geospatial Platform asset capability, maturity, readiness and performance measures will also be developed, reflecting the desired outcomes of OMB, Platform partners and customers and the FGDC Steering Committee.

To the greatest extent possible, Geospatial Platform portfolio management will utilize existing portfolio and lifecycle management frameworks, maturity models, best practices and tools, as well as dashboard and balanced scorecard approaches. Used in tandem with standard management approaches, these tools and analysis processes can help evaluate and manage the health of the Geospatial Platform portfolio assets. Examples of existing standards for project, program and portfolio management as well as best practices, tools, standard operating procedures and IT investment dashboards that may be adopted and/or adapted for use in the portfolio management include:

- Requirements within Exhibit 300/Capital Planning and Investment Control (CPIC) for Select, Monitor and Evaluate.
- OMB Circulars A-16, A-11, A-130.
- Processes outlined within the A-16 Supplemental Guidance.
- The Performance Institute Standard for Portfolio Management (ANSI/PMI 08-003-2008).
- Information Technology Infrastructure Library (ITIL).
- The U.S. Government Accountability Office (GAO) IT investment management maturity model.

E.4. Priorities

The portfolio management priorities include:
- Formal endorsement and approval of the A-16 Supplemental Guidance.
- Initial inventory and selection of geospatial data, services and applications (See Common Data, Services and Applications priorities).
- Acceptance, adoption and implementation of A-16 Supplemental Guidance lifecycle management process and reporting for National Geospatial Data Assets (NGDA).
- Complete proposals for services, applications and infrastructure portfolio management processes and gain FGDC Steering Committee concurrence (see Common Data, Services and Applications priorities).
- Improve the alignment of the FGDC cross-agency investments to Administration priorities and Federal agency high value mission objectives.
- Research and consider the American National Standards Institute (ANSI) Standard for Portfolio Management as the Geospatial Platform framework for portfolio management governance.
- Support Administration priorities for openness, transparency and participatory government.
- Complete readiness assessment of various components so that the Geospatial Platform optimizes investments.

Appendix F.   Federal Geographic Data Committee Structure and Roles

F.1.   Federal Geographic Data Committee (FGDC) and Work Group Structure

The Federal Geographic Data Committee (FGDC) is an organized structure of Federal geospatial professionals and constituents that provide executive, managerial, and advisory direction and oversight for geospatial decisions and initiatives across the Federal Government. In accordance with OMB Circular A-16, the FGDC is chaired by the Secretary of the Department of the Interior with the Deputy Director for Management, OMB as Vice-Chair. The FGDC's structure is represented in Figure F.1.

The acronym *FGDC* is often used interchangeably to refer to the Steering Committee; the Office of the Secretariat (OS); or the committee structure as a whole, causing confusion. The Federal Geographic Data Committee is the Steering Committee which is made up of senior Federal agency officials, and directs, approves, and oversees the activities of all the supporting groups, subcommittees, and work groups. The FGDC OS is an office hosted in the U.S. Geological Survey that provides staff support for myriad FGDC activities and initiatives, and fulfills a number of key supporting roles.

Steering Committee
The FGDC is governed by a **Steering Committee** which is the policy-level interagency group whose central focus is to provide executive leadership for the coordination of Federal geospatial activities between, among, and within agencies by establishing policy and providing guidance and direction to the member agencies. The Steering Committee is responsible for overseeing OMB Circular A-16 related activities and the implementation of the National Spatial Data Infrastructure (NSDI). The FGDC Chair and Vice-Chair lead this committee which is made up of Senior Agency Officials for Geospatial Information (SAOGIs) and has representatives from Federal organizations, including the Executive Office of the President and Cabinet-level and independent Federal agencies.

Executive Committee
The FGDC **Executive Committee** is a subset of the Steering Committee and provides advice and guidance to the FGDC Chair and the Vice Chair on major Federal geospatial priorities and initiatives. The FGDC Chair and Vice-Chair lead this committee which has representation from OMB and the seven Federal agencies with the largest investments in geospatial technologies.

Coordination Group
The FGDC **Coordination Group** provides advice on the day-to-day business of the FGDC to facilitate interagency coordination and implementation of the NSDI at the operational level. The Coordination Group oversees and provides the functional leadership for the FGDC subcommittees and working groups, as well as the Geo LoB Work

Groups. The Coordination Group is Co-Chaired by the Executive Director of the FGDC Office of the Secretariat (FGDC OS), and an elected Federal member of the Coordination Group. Non-Federal collaborating partners participate in most of the Coordination Group meetings and work on subcommittees and work(ing) groups.
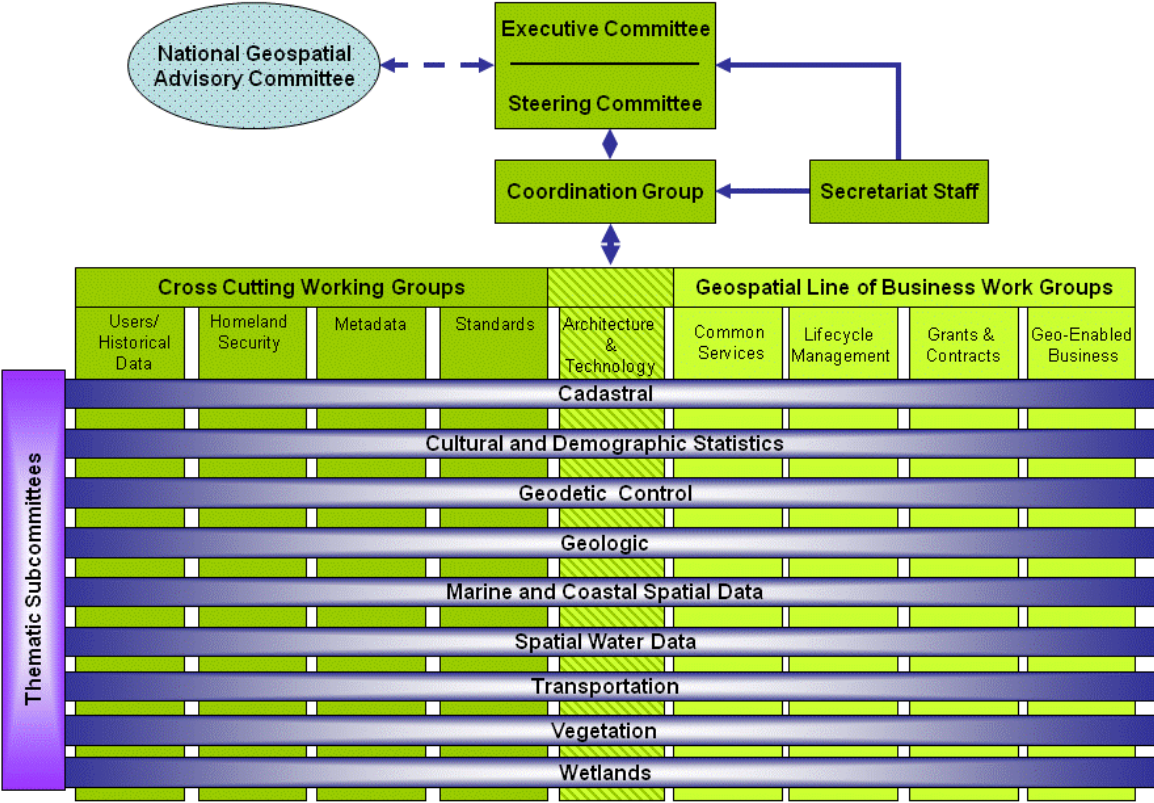

Figure F.1. FGDC Structure

FGDC Subcommittees, Working Groups, and Geospatial Line of Business Work Groups
The FGDC structure includes agency-led working groups and subcommittees and Geospatial Line of Business Work Groups.

FGDC Thematic Subcommittees - OMB Circular A–16 identifies 34 data themes of national significance and assigns responsibility for each of the data themes to one or more Federal agencies. FGDC thematic subcommittees are established for nine of the data themes to address data theme issues. Federal agencies have responsibility for, and lead, the thematic subcommittees.

FGDC Working Groups - FGDC working groups crosscut the subcommittees and focus on issues common to, or supporting the NSDI data themes, such as standards and common services.

Geospatial Line of Business Work Groups - The Geospatial Line of Business (Geo LoB) Work Groups were developed to support this electronic government (E-Gov) initiative. The FGDC has been assigned responsibility for these

work groups by the OMB. The Geo LoB Work Groups focus on cross-agency geospatial issues related to geospatial policy, business requirements, and business management processes.

National Geospatial Advisory Committee
The National Geospatial Advisory Committee (NGAC) was established under the Federal Advisory Committee Act and is sponsored by the U.S. Department of the Interior. The NGAC is an advisory body that provides advice and recommendations on Federal geospatial policy and management issues and is a forum to convey views representative of partners in the geospatial community. NGAC membership includes representatives from 28 Government and nongovernmental organizations. The committee holds public forums to discuss geospatial activities and solicits input from State, Tribal, regional, and local governments, academic institutions, and the private sector.

FGDC Office of the Secretariat (FGDC OS)
The FGDC OS is an office located within the U.S. Geological Survey in the Department of the Interior. The FGDC OS staff provides support for all components of the FGDC structure. The FGDC OS is not a policy making body but rather supports the efforts of the Steering Committee, Executive Committee, and Coordination Group. The FGDC OS staff has numerous roles and perform numerous tasks in support of the FGDC. The FGDC OS:

- Acts as Managing Partner for the Geo LoB, E-government initiative, on behalf of DOI.
- Is the Designated Federal Official for the NGAC FACA committee.
- Provides staff support for the FGDC Chair, Vice-Chair, and their designees.
- Initiates, participates, and or leads FGDC committees, subcommittees and working groups.
- Drafts policies and procedures for consideration and approval by the Coordination Group, the Executive Committee, and the Steering Committee.
- Provides support to the NGAC and its subcommittees.
- Provides project management support for FGDC initiatives.
- Administers the FGDC standards program.
- Administers the NSDI Cooperative Agreements Program (CAP).
- Administers the FGDC International Spatial Data Infrastructure program.
- Manages the NSDI training and outreach program.
- Maintains the FGDC website and membership lists.
- Manages all administrative requirements associated with scheduling and conducting meetings.
- Undertakes staff analysis, technical development, and other activities on behalf of the Coordination Group.

Collaborating Partners
The FGDC solicits the involvement of public interest groups who participate within the committee structure to ensure that their needs are included in the developing NSDI. These collaborating partners include State, Tribal, and local governments; academic institutions; and a broad array of private sector geographic, statistical, demographic, and other business information providers and users. The NSDI strives to build upon local data wherever possible. Collaborating partnerships are open to public, private, and nonprofit organizations whose missions are complementary to the mission of the FGDC.